Rohde & Schwarz Topex

MobiLink IP

VoIP-GSM Gateway

User Manual

2012

ROHDE&SCHWARZ

Dear Client!

Thank you for purchasing the ROHDE & SCHWARZ TOPEX S.A. “MobiLink IP” product and congratulation for your wise choice.
Our MobiLinkIP has the following features:

- **VoIp-2- Mobile interface**
  Interfaces between Voice over IP and two modules for GSM or 3G mobile networks
- **Dual Mobile for LCR**
  It uses two cellular modems (synchronous) to automatically select the network with the best price for the call coverage in the operating area.
- **Various modules available**
  The equipment can be fitted with different types of 2G or 3G modules, tri-band or quad-band, according to the customer’s requirement and the type of mobile networks that are active in the area intended for usage.
- **Ease of Use**
  Web based configuration interface.
  No additional programs are required.
- **Advanced SMS capabilities**
  You may send and receive SMS over the GSM modules from the Web interface. With “Group sending” you can send out multiple text messages to several mobile numbers in a single operation.
- **SMS-2-Mail and Mail-2- SMS**
  Performs conversion from/to e-mail messages into SMS
- **Dual Flash Memory**
  For enhanced reliability, the embedded system uses a dual Flash memory.
  One flash circuit is write-protected, being dedicated for the operating system (kernel). The other flash circuit is for the applications, which can be easily updated, upgraded or enhanced.
- **High security**
  Configurable state packet inspection firewall for Internet connection
  Secure HTTP (HTTPS) access to configuration pages
- **Versatile connection**
  By default is employs secure Web connection (https) but the user may select to use instead a simple http link, if required by the applications
- **Aliases and VLAN**
  Logical interfaces may be defined, in addition to the physical Ethernet interface – alias IP addresses and several Virtual LANs
- **DSCP Settings**
  You can set up the values for Differentiated Service Codes for SIP and respectively RTP, to guarantee priority for VoIP
- **Easy Firmware Updating**
  Automatic update process using the web configuration interface.
- **Highly versatile**
  It can be used together with an IP-PBX, for SIP subscribers.
  It may be also used as standalone, with a soft-phone or hardware IP phone.
- **Multiple mobile networks and standards supported**
  The embedded modems are multi-mode devices for GSM/3G networks also multi-band. This way one may use any mobile network available in the area: from classic GSM (2G) in the 800/900/1800 MHz frequency bands, up to 3G on 2100 MHz.
- **Simple installation and operation**
  Its installation is simple; just insert the SIM cards and plug in the cables (Ethernet connection, external antennas, and power adapter).

Conformity!

ROHDE&SCHWARZ

Rohde & Schwarz Topex S.A.

Declaration of Conformity

No: 1368

We, designer and manufacturer

Rohde & Schwarz Topex
Feleacu 10, 1st District, Bucharest
014186, ROMANIA
www.topex.rohde-schwarz.com

Declare under our sole responsibility that the product:

Product Name: **MobiLink IP**

Product Description: VoIP - GSM / UMTS gateway

to which this declaration relates is in conformity with the essential requirements and other relevant requirements of the R&TTE Directive (1999/5/EC).
The product is in conformity with the following standards and / or other normative documents:

Health & Safety (Art. 3(1)(a)):
EN 60950-1 :2001

EMC (Art. 3(1)(b)):
EN 55022:2000
EN 55024:2001

MobiLink IP is equipped with radio modules SIEMENS MC55i, which conform to:
Health & Safety (Art. 3(1)(a)):
EN 60950-1:2001 + A11 :2004

EMC (Art. 3(1)(b)):
EN 301 489-1:V1.6.1;
EN 301 489-7 & 24: V1.3.1

Spectrum (Art. 3(2)):
EN 301 511: V9.0.2
Declaration of Conformity issued by SIEMENS AG, Siemensdamm 50, 13629 Berlin, Germany.

Product has applied the **CE** conformity mark.

Supplementary information:

Testing Lab involved: ICPE, Bucharest, Romania

Technical file held by:
The technical documentation relevant to the MobiLink IP product is held at Rohde & Schwarz Topex Company at the address mentioned above.

Place and date of issue (of this DoC): 13th of December 2011, Bucharest, Romania

Signature: _____ Signature: _____

President Mr. ADAMESCU Dan Q.A Director. Mrs. PĂUNOIU Carmen

Rohde & Schwarz Topex SA Bucuresti

S. C. Rohde & Schwarz Topex S.A. - two-tier managed company; IBAN EUR: RO91BRDE410SV18500744100; IBAN USD: RO12BRDE410SV18800114100;
Trade Registry reg. no.: J40/21109/1994, Fiscal registration code: RO 6502278; Capital Share: 240000 RON

WEEE Directive Compliance



WEEE Directive

This symbol applied on the product or on its packaging means that this product fulfils the WEEE Directive. The product shall not be recycled as household waste; it will be disposed separately as sorted waste.
At the end of its life it will be given to a specialized recycle firm.

! Please do not dispose of this product as unsorted wastes (household waste); recycle it to protect the environment. Separate the packages according to waste disposal options and sort it for recycling.

For supplementary information contact us to:
Phone: +4021 408.39.00 or www.topex.ro

Record of Changes

ISSUE	DATE	NUMBER OF PARAGRAPH	A* M D	TITLE OR BRIEF DESCRIPTION	MADE BY
A-E	2009-2011	All	A,M	First issue and different changes	C. Malide V. Sfetcu
F	2012	Cover, conformity	A,M	Added conformity information	V. Sfetcu
G	May 2012	Update to firmware 1.2.21 and system 1.0.13, corrections	A, M	Perform update of print screens, explanations and features according to new firmware	C. Malide

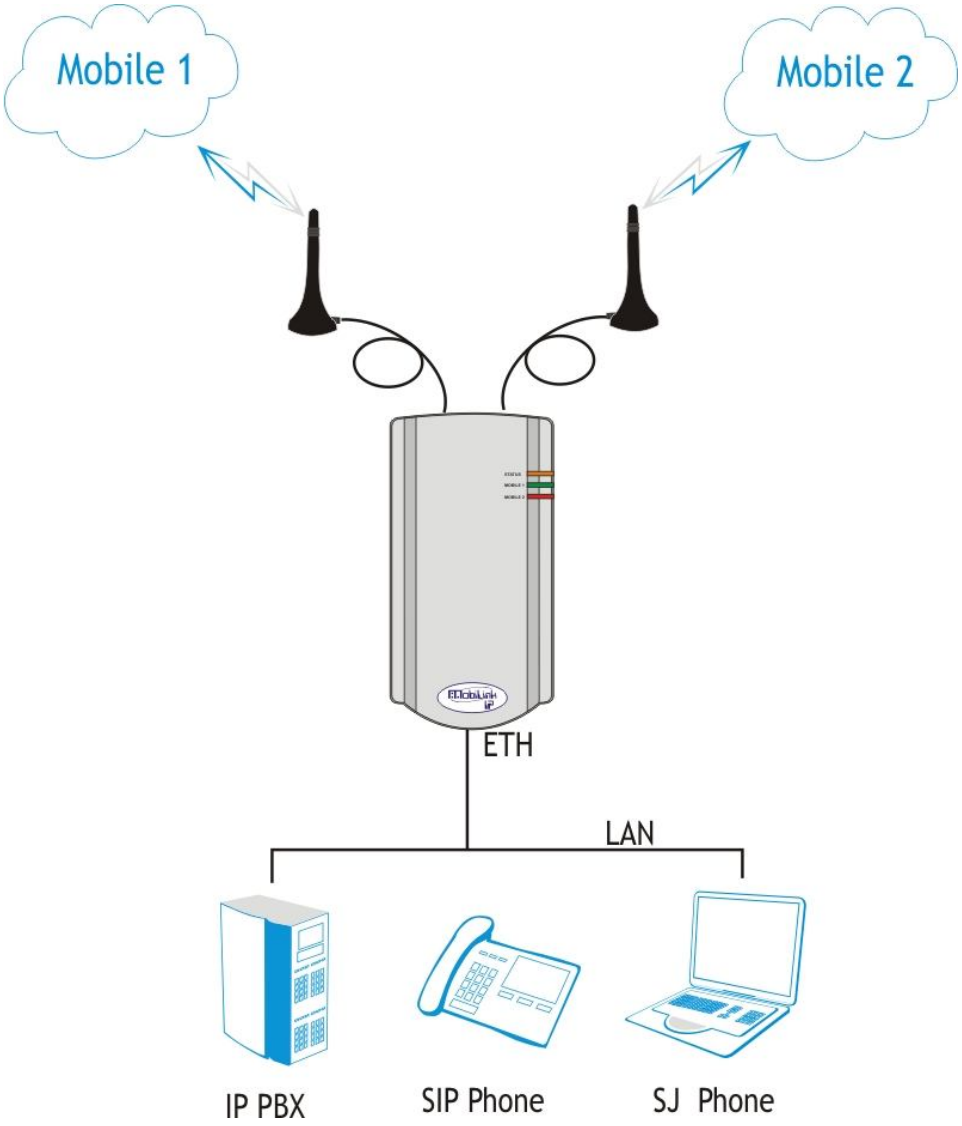
A – Added, M- Modified, D- Deleted

Content

Dear Client! 2
Conformity! 3
Record of Changes 5
Content 6
1. INTRODUCTION 8
2. PACKAGE CONTENT 10
3. MobiLink IP FEATURES 11
4. IDENTIFICATION 12
4.1 LABELS AND IDENTIFICATORS 12
4.3 SOFTWARE INFORMATION 14
5. INSTALLATION 16
5.1 ESTABLISHING THE BEST LOCATION 16
5.2 MOUNTING (HARDWARE INSTALLATION) 17
5.3 IDENTIFICATION OF CONNECTORS 17
5.4 CONNECTING THE DATA CABLES 18
5.5 CONFIGURING AND INSTALLING THE SIM CARDS 21
5.6 Connecting the external antennas 23
5.7 Power up 24
5.8 Status indicators 25
6. CONFIGURATION 26
6.1 Required conditions for configuration 26
6.2 Using the web interface 26
6.2.1 Set up a connection 27
6.2.2 Connecting to the MobiLink 29
6.2.3 Log-in 32
6.2.4 Dual log-in 34
6.2.5 Menu Items 35
6.2.6 SMS Pages (log-in as user) 37
6.3 NETWORK 50
6.3.1 Status 50
6.3.2 IP Settings 55
6.3.3 Static Routes 57
6.3.4 Commit 59
6.3.5 SNTP Client 59
6.3.6 Firewall 62
6.3.7 User Interface 64
6.3.8 VLAN 64
6.3.9 ALIAS 66
6.4 Mobile 68
6.4.1 Status 68
6.4.2 Settings 73
6.4.3 Operator Selection 77
6.4.6 Edit Operator List 78
6.4.4 AT Commands 79
6.5 SMS 82
6.5.1 Status 82
6.5.2 Settings 83
6.5.3 To/From E-Mail 86
6.5.4 Send 91
6.5.5 Group 93
6.5.6 Inbox 99
6.5.7 Outbox 103
6.6 VoIP 104
6.6.1 Status 105
6.6.2 Settings 105
6.6.3 Codec Settings 106
6.6.4 DTMF Settings 107
6.6.5 Voice Settings 109
6.6.6 RTP Settings 110
6.6.7 SIP Settings 111

6.7 CALL CONTROL 112
6.7.1 Status 112
6.7.2 Settings 115
6.7.3 Access In 116
6.7.4 Incoming Calls 117
6.7.5. Definition of DCR 119
6.7.6 Outgoing Calls 120
6.7.6 PBX Query 122
6.7.8. Parameters 126
6.8 REGISTER 127
6.8.1 Status 127
6.8.2 Settings 128
6.9 LOCAL USERS 128
6.9.1 Local Users Status 129
6.9.2 Local Users Settings 130
6.9.3 Local Users Definition 130
6.9.4 Mobile Users Definition 131
6.9.5 Dynamic Call Routing and Call-back (CBK) Operation 133
6.9.6 Trunk or User? 134
6.10 SYSTEM 135
6.10.1 Status 136
6.10.2 Syslog View 138
6.10.3 Syslog Settings 140
6.10.4 Update 141
6.10.5 Password 152
6.10.6 Default Configuration 153
6.10.7 Save 155
6.10.8 Load 157
6.10.9 Time 160
6.10.10 Cron 163
6.11 TOOLS 166
6.11.1 Capture 166
6.11.2 Settings 170
6.11.3 Download Capture 174
6.11.4 View Capture 176
6.11.5 Ping 178
7. TECHNICAL SPECIFICATIONS 180
8. OPERATING ENVIRONMENT 181
9. REGULATORY INFORMATION 182
10. GLOSSARY – Acronyms and explanations 183
Disclaimer! 188

1. INTRODUCTION



REASON FOR THE INTRODUCTION OF THIS PRODUCT:

- To complete the line of MobiLink products

MobiLinkIP is a new member of the Rohde & Schwarz Topex S.A. family of gateways and PBXs. It is a compact variant of the classic VoIP to mobile gateway, featuring just two mobile modules and an ETH port. While previous MobiLink devices connected analogue (FXO/FXS) or digital (ISDN NT/TE) phone ports to mobile networks, this one has a Voice over IP port, since it was designed to convert outgoing and incoming calls from VoIP to mobile.

The purpose remains the same, cutting down the costs of cellular calls, but the new mobile-2-VoIP interface with LCR capabilities represents a new approach in *convergence* between VoIP and home or corporate mobile communications.

By interfacing between mobile networks and IP it allows end customers to benefit by saving costs, while its two modules design provides scalability and flexibility.

Scalability means that one can build up the solution cost effectively, by adding another device for each extra pair of mobile channels required. Flexibility means that, while previous convergence equipment from Rohde & Schwarz Topex S.A. did provide tens of VoIP and GSM channels on the same location, the new product allows one to build a *distributed* solution, with individual MobiLinkIP devices located exactly where it is needed in different countries or even continents.

To extend the range

While the analogue or digital MobiLink equipment allowed connections to phone terminals or PBX's located a few meters or up to 1000m away, with MobiLinkIP the length of the connection becomes infinite. The mobile gateway may be located anywhere in the world and still perform an interface task.

Support, debugging and firmware upgrading can also be performed faster and from a longer distance. Previous versions of the MobiLink were connected to a local computer via serial RS-232 or USB cable for management. With MobiLink IP, management of the device is done remotely, by means of the Web interface. You can send /receive multiple SMS messages, register users, define routing rules, perform diagnostic or update / change the firmware. Previously, these operations had to be performed from the computer connected to MobiLink, using the OAM program!

With this new MobiLink IP, the management computer can be in anywhere in the world. The professional who performs debug or update of firmware connects to it remotely, over IP networks, and performs all tasks of operation, administration and management via Web interface.

Intended use

MobiLink IP was also intended to be a complimentary product for the line of Class 4 & Class 5 Rohde & Schwarz Topex S.A. Soft-switches, allowing cost-effective access to mobile networks for the SIP users registered to the Rohde & Schwarz Topex S.A. IP-PBX.

Using the MobiLink IP can be beneficial for home users too, but it was intended for **office use**, both for companies that have many foreign affiliates and for small to medium companies that already own an IP infrastructure. Companies with international offices can use one or several MobiLink IP devices at each location - the calls will be routed as VoIP via Internet to the respective locations where they will be **terminated** as local GSM calls to the respective mobile networks, with minimum costs.

Enterprises with existing IP infrastructure will use the MobiLink devices to **terminate** the calls to mobile networks, achieving substantial savings on outgoing and incoming calls from IP to GSM networks and vice versa.

It can also be used by providers, ensuring low-cost call termination at different locations throughout the world. VoIP calls originating from anywhere can be sent via Internet to be **terminated** through MobiLinkIP devices located at the corresponding sites. The respective MobiLinkIP devices will then directs the calls to the required local GSM network, with the minimum possible cost.

Flexible Usage

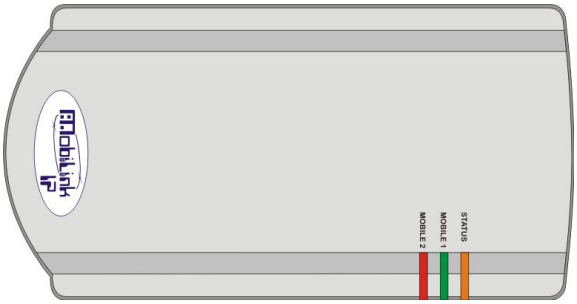
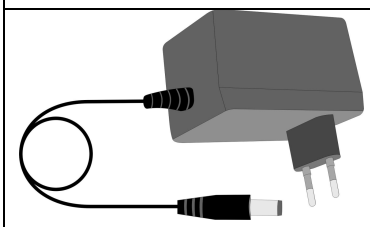
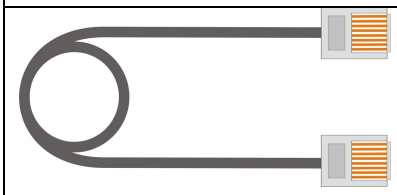
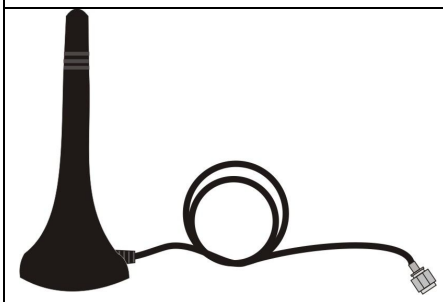
MobiLinkIP can be used in several ways:

- with an IP PBX that has SIP subscribers;
- with hardware SIP telephones,
- with soft phones, such as the free application SJ Phone.

In order to ensure correct installation/configuration and good operation of the MobiLink IP device, the manufacturer strongly recommends the study of this manual before attempting operation.

2. PACKAGE CONTENT

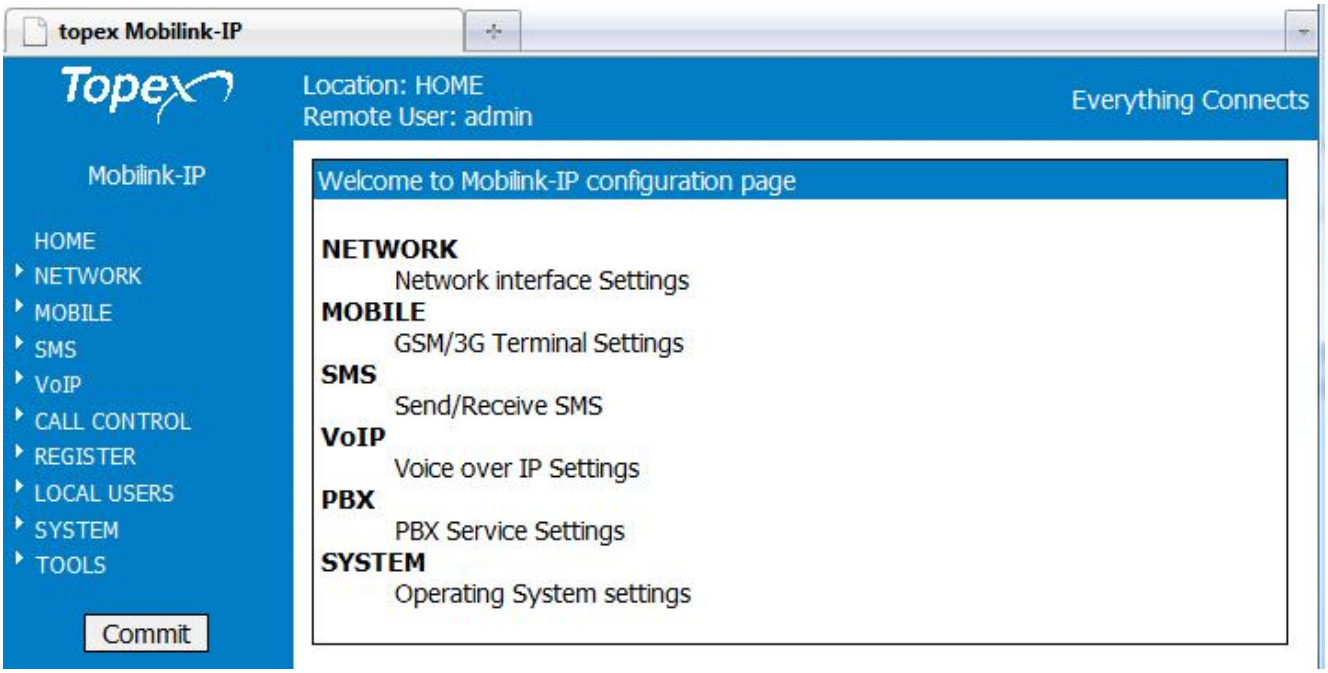
When opening the package, please check the contents against the following:

Component Image	Component Description
	MobiLinkIP unit in its plastic case. It is a mobile gateway that terminates VoIP calls, **which** least call routing for SIP calls.
	Power supply: switching mains adapter Input: 100-240V $_{A.C}$ Output: 12V$_{D.C}$. / 2A Max. Power: 25 W
	Ethernet cable for local network connection A short piece of UTP straight cable, with RJ-45 connectors.
	Antennas for mobile networks Multiband, with magnetic base and 2,5 m long cable
-	CD with User's Manual
-	Quick Install
-	Warranty Certificate

3. MobiLink IP FEATURES

The MobiLinkIP device is a versatile VoIP-2-mobile gateway that cuts down interconnection costs and performs convergence between mobile voice networks and SIP calls.

MobiLinkIP is fully configurable via Web pages; *it does not require installation of drivers or any additional software* on a PC. The graphics interface that shows up in the browser allows easy access to all its settings:



Since the product is Linux based, applications to enhance MobiLinkIP or to customize it according to the special needs of various clients can be quickly designed by our software developers.

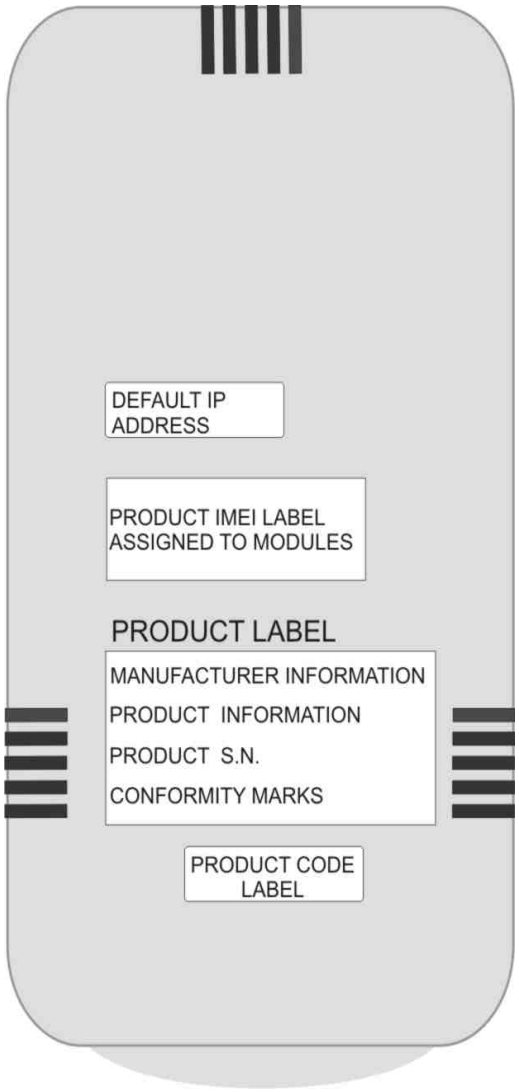
If signing up for our technical support offer, our best technical experts are available for technical queries. In addition, the software upgrades can be done remotely via the Internet, and are free of charge.

MobiLinkIP is a highly versatile solution, when the customers require special solutions; its embedded firmware can be easily upgraded over the Internet.

4. IDENTIFICATION

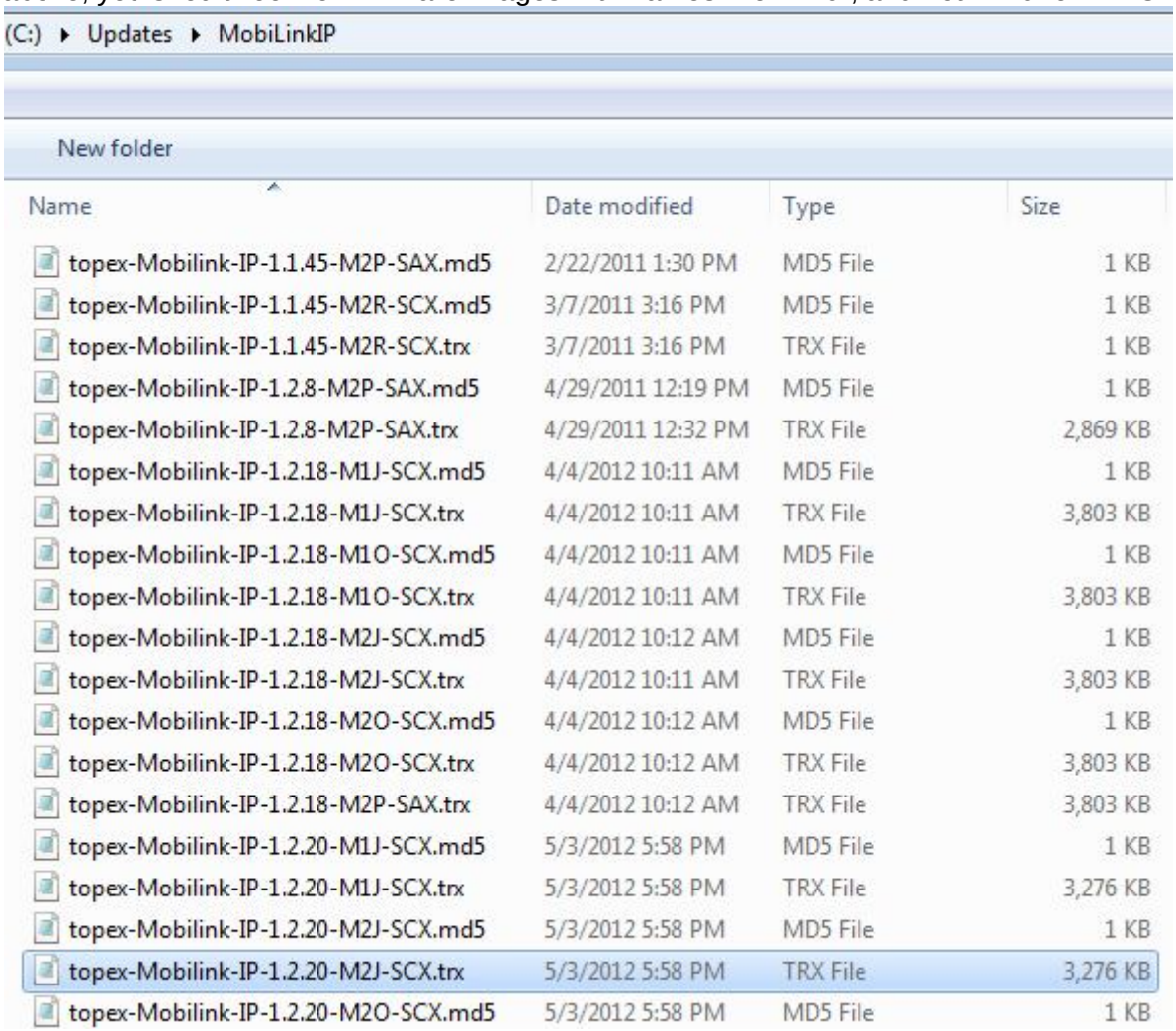
4.1 LABELS AND IDENTIFICATORS

On the rear of the case of the device there are several labels or tags that indicate the characteristics and compliance.

Rear View of MobiLink IP	LABEL TYPE	SIGNIFICANCE OF LABELS
	**PRODUCT LABEL**	- Full manufacturer identification; - Model identification, which allows the network operator to check the terminal as one of its approved models, so no additional certification or approval is required; - Description and details of variant, the type of mobile networks it works with, number of mobile modules, supply voltage - Conformity marks required by product certification and other UE or international directives
	PRODUCT CODE LABEL	- indicates exactly what type of product it is. You must mention this code when you call Support for upgrade and for repairs
	PRODUCT IMEI LABEL	- IMEI code, International Mobile Equipment Identity for SIM based equipments. An unique 15- or 17-digit number. - If the Topex device features several mobile modules – for instance MobiLink IP has two modules - it will have, correspondingly, more IMEI labels - one for each mobile modem
	DEFAULT IP ADDRESS	Default IP address of the Topex device in LAN. For MobiLink IP, the default address is **192.168.173.1** ***Warning!*** *Please read carefully this label, since different Topex equipments may have different default IP addresses, such as 192.168.1.1. or 10.0.0.1. The MobiLink IP gateways have, as shown on the label glued, the default address:* ***192.168.173.1*** *Also, the label clearly specifies the* ***type of connection****, which is* ***HTTPS****. Most Topex devices such a secure connection, only a few use the ordinary http link. If you try to use the wrong type of connection, it will not work, so please look at the "Default connection" label before establishing a connection to the Topex box.*

Explanatory Notes:

The “Product code label” indicates exactly what type of product it is. It is the short version of the full product / firmware name, such as “**Mobilink-IP-1.2.20-M2J-SCX”**
You must mention this code when you call Support for upgrade and for repairs. Also, when you perform software upgrade you must check that the firmware version you want to load is fitted for your model of equipment.
For this, the first letters must be the same – if you own a MobiLink IP with the label “**MOBIPC-M2J**” as shown above, you should look for firmware images with names like “M2J”, and not “M1J” or “M2O”:



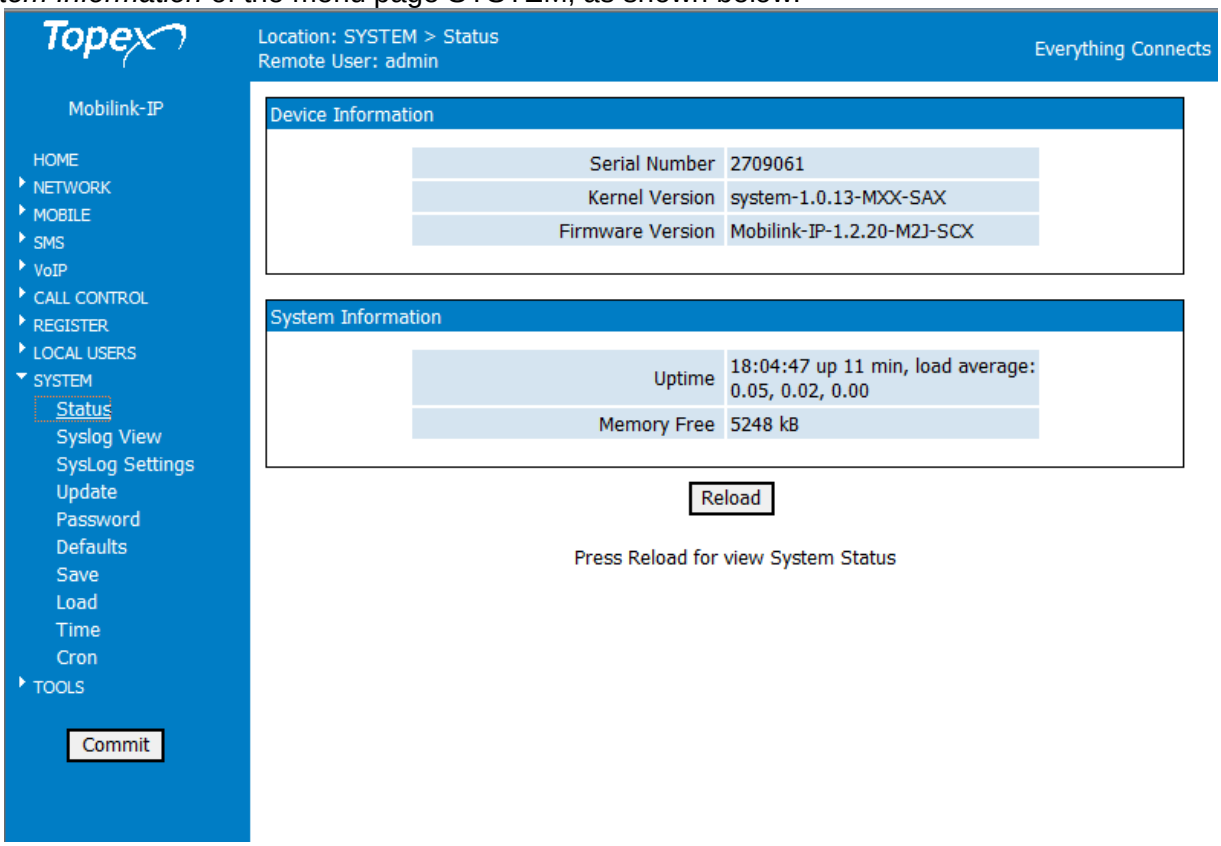
The rest of the letters describe the software version, and of course you can load a firmware image with more features, or an updated version, but the letters describing the hardware model must correspond.

4.3 SOFTWARE INFORMATION

The Web interface displays some of the information described above, but also important additional information, which is NOT available through the adhesive tags. Such information is related to the serial of the motherboard of the device, or the software version actually running on it.
For this you must access the System> Status page. Just enter into the browser the URL for the page: https://192.168.173.1/

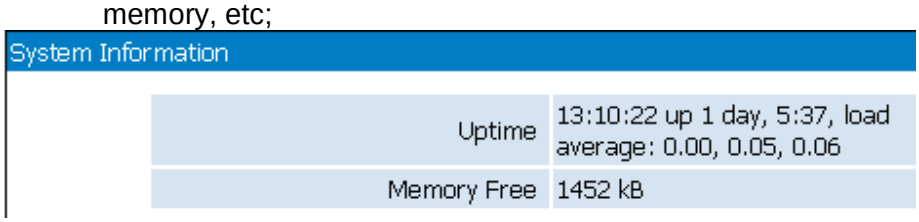
System Status

The information about serial number, current firmware and kernel can be found in the option Status – *System Information* of the menu page SYSTEM, as shown below:

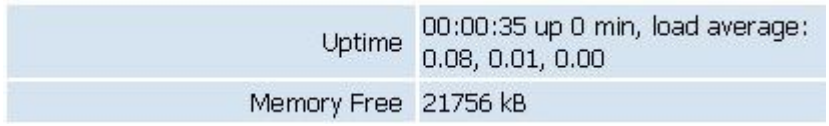


Two categories of information are displayed here:

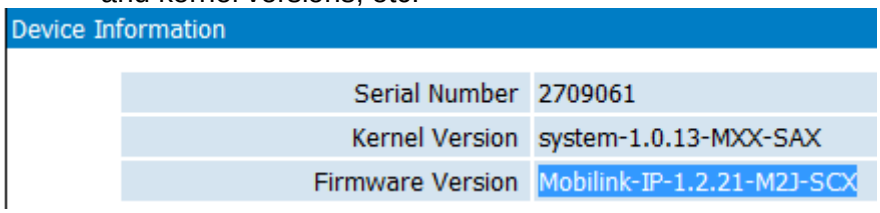
- **System info**, with temporary (current) data, such as uptime, load, available (free) memory, etc;



or



- **Device info**, permanent data, which is important for this chapter – serial number, firmware and kernel versions, etc.



The permanent identification info shown refers to the following elements:

- Serial Number: each MobiLinkIP device from Rohde & Schwarz Topex S.A. has a unique identification number, such as 2709061 in the above examples, etc. This is the serial number of the main board of the Rohde & Schwarz Topex S.A. gateway. According to the requirements of the users, a certain MobiLinkIP motherboard may be factory-fitted with one or two modems of different types, or other hardware features, but the serial numbers remain the same;

- Firmware version: version of the application firmware running on MobiLinkIP: you may see "**Mobililik-ip-1.2.18-M2J-SAX"** or "**Mobililik-ip-1.2.21-M2J-SCX"**. The firmware can be easily updated (a new version), upgraded (new software features added) or switched to another variant;

- Kernel version (Operating system version), such as "system-1.0.8-MXX-SZW' or "system-1.0.13.-MXX-SAX" in the examples above. The application firmware and the operating system (root or kernel) may be updated separately, according to the requirements of the users. The operating system memory is write-protected, thus in case of problems, accidental erasing or power failure during updating, there is still a functional "system" allowing loading of a new software image;

To be able to see this Status page, one must be logged-on to the MobiLinkIP device.

5. INSTALLATION

In order to ensure the proper operation of the MobiLinkIP equipment you must follow the set-up steps shown below:

- Determine the exact type and model of Rohde & Schwarz Topex S.A. equipment
- Establish the best location
- Mounting (Hardware installation)
- Identification of connectors
- Connecting the Ethernet cable
- Disable PIN code request for the SIM to be used
- Configuring and installing the SIM cards
- Connecting the external antennas for the mobile networks
- Power up

Important note: Before starting installation, it is necessary to know exactly what type of equipment it is (several different versions or sub-types come in exactly the same case, plastic or metal). In order to determine the exact type and model of MobiLink IP equipment, look at all the labels or indicators for the specific device. Most of this information is found on the labels that are on the bottom of the case. Note that some of these indicators can only be seen in the Web interface for administration. For instance, in case of firmware upgrade performed by the customer, the label on the product remains the same, although the application program is now different!

5.1 ESTABLISHING THE BEST LOCATION

In order to determine the best location for the ROHDE & SCHWARZ TOPEX S.A. mobile gateway, consider the following:

- The length of the Ethernet cables that connect the MobiLinkIP gateway to the PC or the network switch must not exceed 100 meters.
- MobiLinkIP should be placed on a flat, sturdy surface located as far from the ground as possible. A high location, on the wall or on top of a desk or a shelf is best for the mobile connections, be it with UMTS or GSM networks.

Also, MobiLinkIP should be kept clear of obstructions and away from heat sources, direct sunlight and heavy-duty electrical equipment.

- To ensure good coverage of the entire wireless mobile network in the area, MobiLinkIP should be installed in a central place in the building. Normally the antenna should be in a vertical position, but if reflections occur, better results may be achieved by changing the orientation.
- For power supply, use only the adapter shipped with MobiLinkIP.

The jacks of different power supplies may fit but the polarity, current, voltage or regulation factor may not be compatible.

- While the device is in operation, the antennas of the MobiLinkIP unit should be at least 30 centimeters away from any human being.

5.2 MOUNTING (HARDWARE INSTALLATION)

The Rohde & Schwarz Topex S.A. MobiLinkIP gateway may be mounted either horizontally, by means of simply placing it on a flat surface, or vertically on a wall (using the mounting kit).

Horizontal mounting

The surface must be level and strong enough to hold the weight of MobiLink IP together with all its cables (power supply and wired LAN connection). A desk, table or shelf is good place for the installation of MobiLink IP.

Wall mounting

The equipment may also be mounted on a wall, by means of the kit included in the package. It is recommended secure the device to the wall. Use professional installation to reduce the risk of injury and damage. The mobile antenna must be in an upright vertical position, but it will be parallel to the equipment's box.

For mounting MobiLink IP onto a wall, use the mounting kit (plastic dowels, woodscrews, etc) provided by Rohde & Schwarz Topex S.A.

On the back there are two pairs of mounting holes, 160 mm apart. The two pairs are located 100 mm from another, to secure the MobiLink IP to the wall with either connectors up or indicators up.

Perform the following steps:

- mark the position of a pair of holes on the wall, spaced at 55 mm apart
- drill the holes in the wall
- insert the plastic dowels into the holes
- thread the metallic woodscrews into the plastic dowels leaving the end to protrude outside for some 5 mm
- hang the case of the MobiLinkIP in the two metallic woodscrews and push it down a little to get it fixed
- if it does not lock properly, adjust the screws

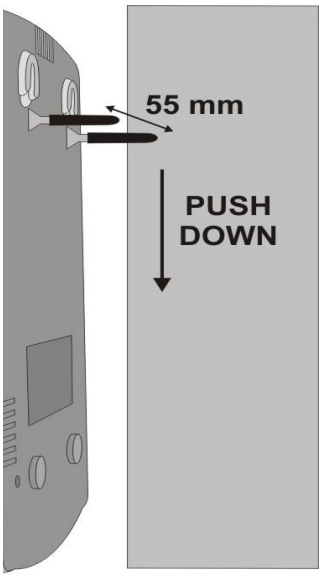


Figure 1. Mounting MobiLinkIP on a wall

No matter if it is installed horizontally or vertically, the best location for MobiLinkIP is in the middle of the location where wireless coverage is needed.

Installing MobiLinkIP on a shelf higher up, with no obstructions around, ensures the best performance embedded GSM or 3G modems.

Take care to ensure adequate cooling of the MobiLinkIP terminal.

5.3 IDENTIFICATION OF CONNECTORS

MobiLinkIP features only two external connectors, as described below. On the bottom panel of the equipment they are, from left to right:

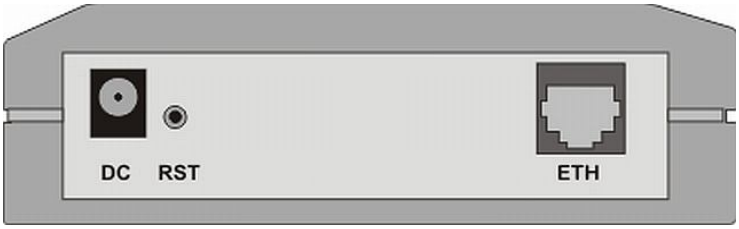


Figure 2: Connectors of MobiLinkIP

- Towards the left edge, the round connector is for the power supply jack, (labeled **DC)** ($12V_{DC}$)
- The black Reset button, recessed (**labeled RST**)
- To the right, one female RJ45 connector for the local network connections **(labeled ETH**

5.4 CONNECTING THE DATA CABLES

To ensure the proper functioning of the Rohde & Schwarz Topex S.A. MobiLinkIP unit, make the right cable connections, as described below.

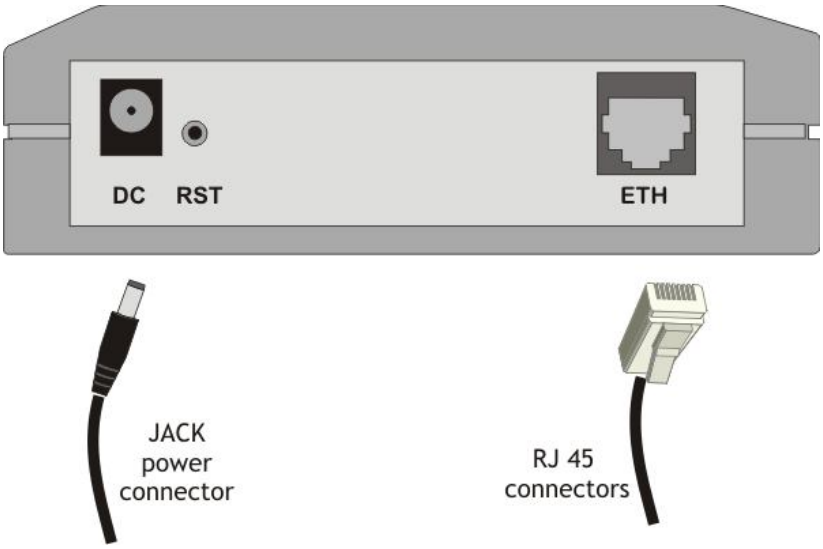


Figure 3: Connecting the cables

For Ethernet network connection:

Use standard UTP network cable (CUT 5) fitted with RJ45 connectors at both ends.
The cable can be either straight-through or crossover, since the MobiLinkIP is auto-crossover.
One short length of RJ-45 cable is supplied with the MobiLink IP device. Use either a 10Base-T or a 100Base-T connection.

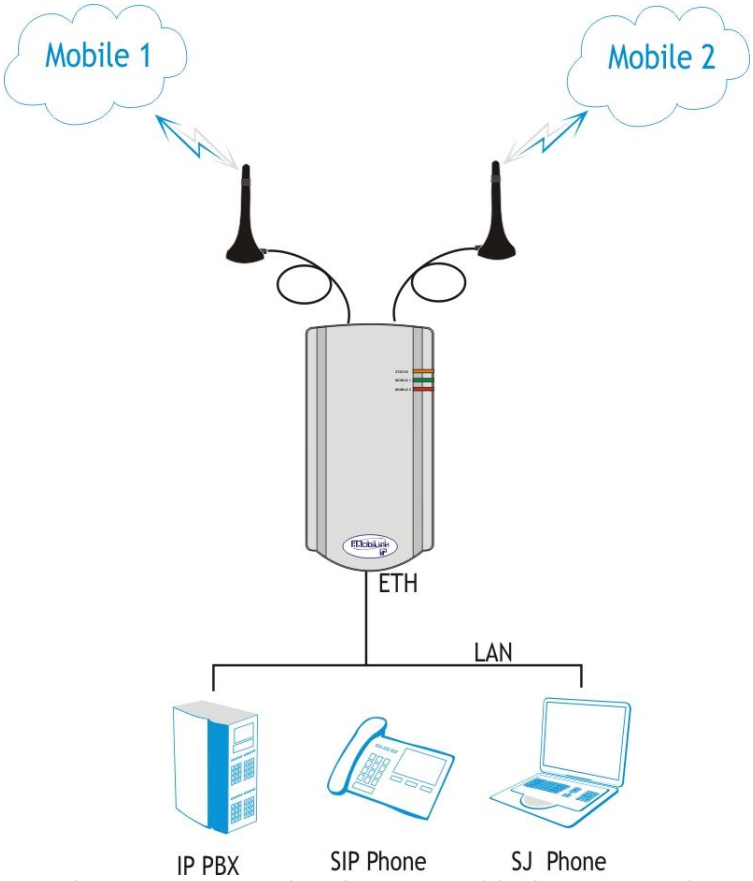


Figure 4: Connecting the LAN cable (UTP- CAT5)

The network cable is to be inserted with one end into the RJ-45 socket of the MobiLinkIP device labeled **ETH**. The opposite end of the UTP cable can be inserted directly into a PC or in switches or hubs. The STATUS indicator LED of the MobiLink case will light up showing physical connection and will blink to indicate data traffic on the respective Ethernet interface.

Power supply:

To power the MobiLink IP unit, insert the jack of the power supply adapter into the supply connector. Do **not** yet plug the adapter into the $230V_{A.C.}$ mains outlet on the wall. The special adapter from Rohde & Schwarz Topex S.A which is part of the MobiLinkIP package, supplies the voltage required to power the equipment. It is an external power supply adapter.

Note: *The adapter is the disconnection device (there is no POWER switch), so the 230 V_{AC} socket-outlet shall be installed near the equipment and shall be easily accessible.*

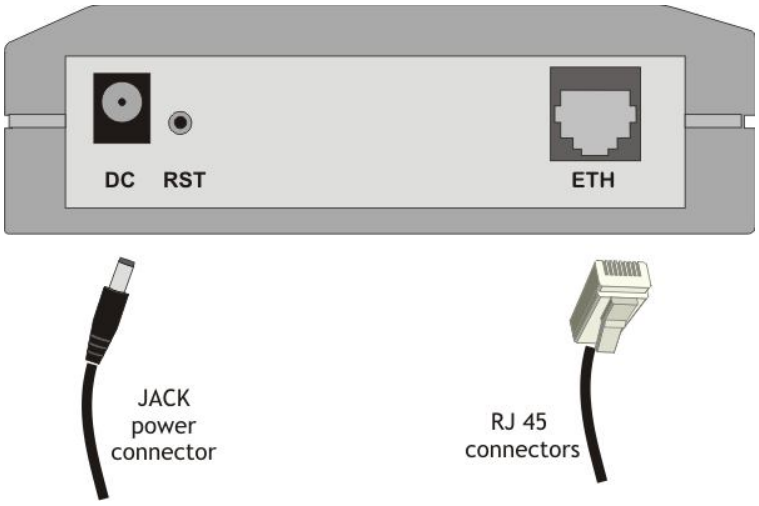


Figure 5: Connecting the power supply

Warning!

- Use only the power supply adapter shipped in the equipment package. Using other kinds of power supplies may cause damage to the equipment.
- To avoid accidents or damage to the equipment, follow the steps described earlier. First, connect the antennas, and then the power supply adapter.
- Avoid connecting or removing the antennas while the MobiLinkIP device is powered.

5.5 CONFIGURING AND INSTALLING THE SIM CARDS

The MobiLinkIP device may feature a single slot or two slots (in dual SIM version) for SIM cards. In order for the MobiLinkIP gateway to work, it must have at least one valid SIM card with subscription to the GSM or 3G voice carrier where connection is needed.

Configuring the SIM card(s)

The one or two SIM card(s) which are used must be active.

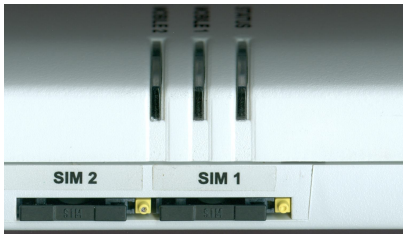
- The SIM card(s) must be configured **before** insertion into the slot of the MobiLinkIP .
- To configure the SIM card, you may use an ordinary GSM cell phone.

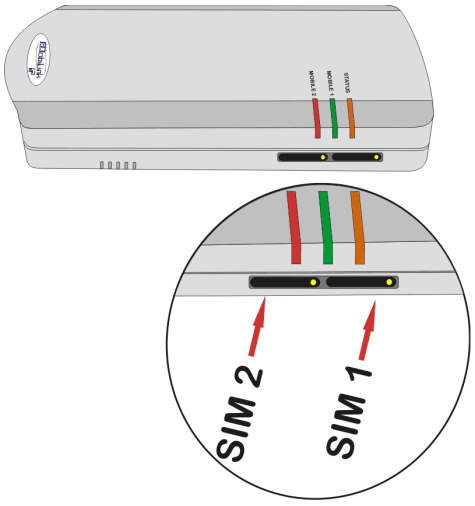
The required configurations are:

- *PIN CODE REQUEST* – you MUST disable (from the menu of the mobile phone) the *PIN CODE REQUEST* security option, so you will not be asked to enter it. *Take care to disable the PIN code **before** inserting the SIM card, to avoid PUK locking!*
- *Disable GSM services* – GSM operator offers different supplementary services for calls. When using the MobiLinkIP interface it is recommended that these options be disabled because they are only available with additional costs.

Inserting the SIM cards

The one or two SIM cards to be used must be inserted into the special tray slots of the ROHDE & SCHWARZ TOPEX S.A. MobiLinkIP device.





The slots for SIM cards are located on the right side of the MobiLink IP box, towards the top, below the indicator LEDs, as shown in the next image.

For inserting or extracting the SIM card use the mobile holder (removable tray) for the respective SIM card.

Use the little yellow button to actuate each holder

Note that in case of two SIM slots, the SIM holders are in a row one following another: the first one (from the left) is SIM2, fro Mobile 2 network, and the second is SIM1, for Mobile 1 network.

Handle with care when inserting or extracting SIM card.

IMPORTANT:

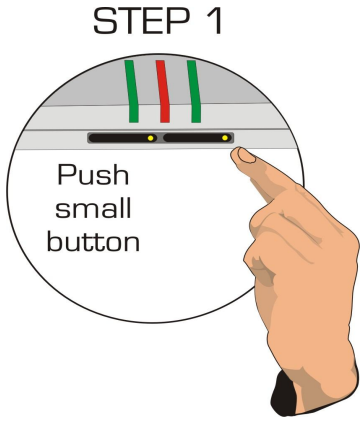
When inserting or changing the SIM card, the equipment must be powered off.

For inserting the SIM card follow the next steps:

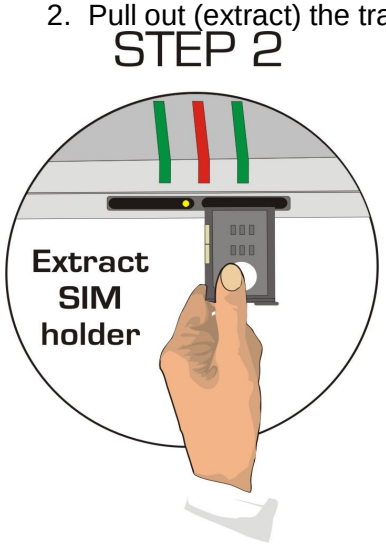
WARNING! Unplug the MobiLink IP unit from the main outlet before insert or replace a SIM card!

For each of the SIM cards, follow these steps:

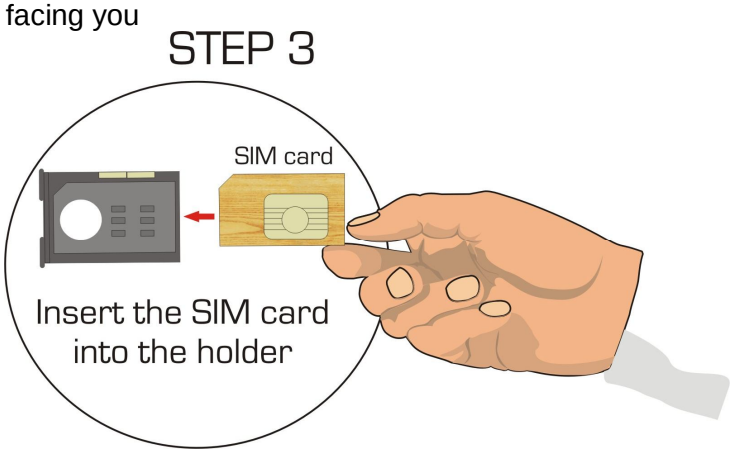
1. Press the little button to eject the SIM holder.



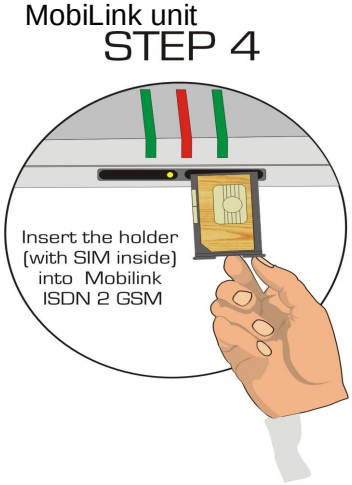
2. Pull out (extract) the tray (SIM holder)



3. Insert SIM card into the holder, as shown – with cut corner upwards and with contacts facing you



4. Push the holder tray with the SIM inside back into the corresponding slot of the MobiLink unit



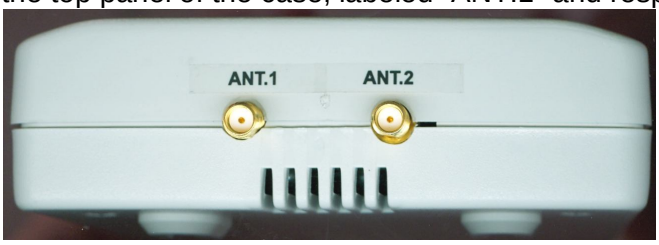
Also follow the steps described above when replacing the SIM cards already installed into MobiLink IP.

Repeat this procedure for the second SIM, take care to insert the SIM card correctly.

5.6 Connecting the external antennas

To ensure a good quality of transmission and to reduce radio interference use the antennas shipped in the MobiLinkIP package. These antennas were designed for the respective frequency bands (multiband to allow proper connection to different mobile networks type GSM or 3G).

The antennas must be connected to MobiLinkIP via the respective RF circular connectors on the top panel of the case, labeled “ANT.1” and respectively “ANT.1”.



These correspond to networks Mobile 1 and Mobile 2. The cable for each Mobile antenna must be threaded into the circular connector of MobiLinkIP labeled “ANT1”, respectively “ANT2”, as shown in the following drawing.

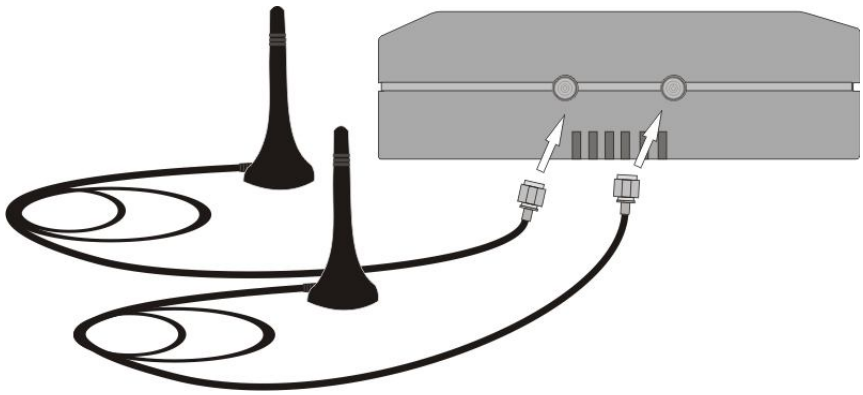


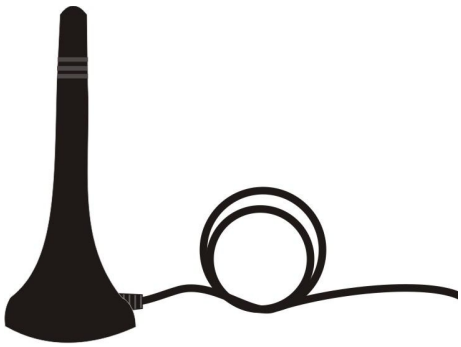
Figure 6: Attachment of antennas

If the site has a low cellular signal, it may not be possible to use the full mobile technology without a special, high gain antenna. Such an antenna should be obtained and installed in a higher position (the roof of the building), directed towards the base station of the mobile network carrier, in order to get best results.

Warning! *Don't use excessive force. Make sure the antenna is securely screwed into the RF connectors, but do NOT use a spanner or screw key, which could damage the antenna connector! Tighten the flange lightly, by hand.*

The antennas have vertical polarization, so they should be placed in vertical or horizontal position, depending of the local field condition.

! Place the antennas on a safe (stable) non-magnetic and flat area. The heavy base of the antenna ensures that it is secured.



The following table shows the main characteristics of the multi-band stick antennas with magnetic base (currently supplied with the MobiLink package).

Frequency bands	GSM 890-960 MHz PCN 1710-1880 MHz PCS 1850-1990 MHz UMTS/HDSPA 1920-2170 MHz
Gain	2 dBi
Polarization	Vertical
Height	Total 73 mm Active stick 43 mm
Base	Magnetic, diameter 2,8cm
Cable	Type RG174, length 2,5 m
End Connector	Nipple, male

Note:

- The MobiLinkIP unit and its antennas should be placed as far as possible from appliances or office equipment that is sensitive to radio interference (microwave ovens, copiers, TV sets, PC displays, and multimedia systems). For best results, try to find a place of maximum signal reception for the Mobile antenna
- In addition, the antenna must NOT be located near heavy-duty equipment that may generate electromagnetic interferences, such as electric motors or heaters.

5.7 Power up

Switch the MobiLinkIP on by connecting the power supply adapter. Following a delay of several seconds, the indicator LEDs will light up.

Remember that the adapter is the disconnection device (there is no POWER switch on MobiLinkIP), so the 230 V_{AC} socket-outlet must be installed near the equipment and must be easily accessible.

5.8 Status indicators

MobiLinkIP has three optical indicator (bicolor LEDs - red and green or red and yellow) that shows the status of the device, respectively of the Ethernet interface and that of the two mobile modules.

The indicators may light up continuously in red, orange or green color, or flash to show status and data traffic.
The three LEDs are located on the upper right corner of the MobiLinkIP case, above the two slots for SIM cards.
They are labeled respectively STATUS, MOBILE1 1 and MOBILE 2.

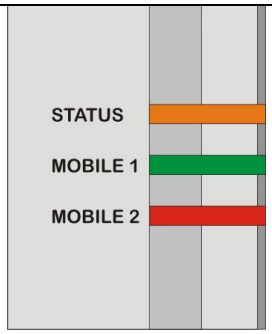


Figure 7: LEDs location

Significance of LED indicators:

STATUS: Shows the state of the equipment. Indicates the proper power supply and the state of the Ethernet interface of MobiLinkIP.
Off = device not powered (no supply voltage), On, Red color = no ETH network is connected, On, Orange color = ETH port connected to the local network, but no traffic, Orange blinking = ETH port connected and data traffic present.

MOBILE 1: Shows the state of the first mobile module.
Off = not installed (the respective module is disabled from software), red blinking = not registered or SIM not present, lights up green = mobile module1 free (available), lights up red = mobile module1 busy (in a call), blinks orange = mobile module1 is blocked because of PIN mismatch, you must enter the correct PIN code.

MOBILE 2: Shows the state of the second mobile module, same significance as first mobile.
Off = not installed (the module 2 is disabled from software), red blinking = not registered or SIM not present, lights up green = mobile module2 free (available), lights up red = mobile module 2 busy (in a call), blinks orange = mobile module2 is blocked because of PIN mismatch.

6. CONFIGURATION

The MobiLink IP can properly perform its functions of high-speed VoIP-2-mobile gateway with the default settings. However, it can be easily configured to meet various usage scenarios. “Configuring” or programming the equipment means adequate setting of all the parameters.

The embedded Linux firmware allows configuring the MobiLink IP without the need of additional software on the computer used for programming.

A web browser as configuration terminal is all that is needed. This means that the MobiLink IP may be used on **any computer platform** and is not restricted to a certain operating system!

Most of the examples in this manual are form using either Windows XP SP3 or Windows 7 Professional, but MobiLinkIP may be used with any operating system.

Using the web browser, the configuration can be performed remotely: the desktop PC or notebook may be connected to the Mobile-2-IP gateway either directly or through a hub by means of wired (Ethernet) connection.

Important Note: *Prior to using this VoIP to Mobile device you should check the basic settings to guarantee it will work in your environment (for instance, it may be required to change the default IP address and subnet mask).*

6.1 Required conditions for configuration

To be able to configure the MobiLinkIP device, one must be connected to a LAN (Ethernet 10Mb/s or 100 Mb/s) and have access to a computer that is connected **to the same network**, via router or switch. Alternately, one may connect the MobiLinkIP **directl**y to the PC or notebook that is used for programming, either with a crossover cable or with a straight Ethernet cable. The Web interface may be accessed with any Web browser, **no additional software is needed**.

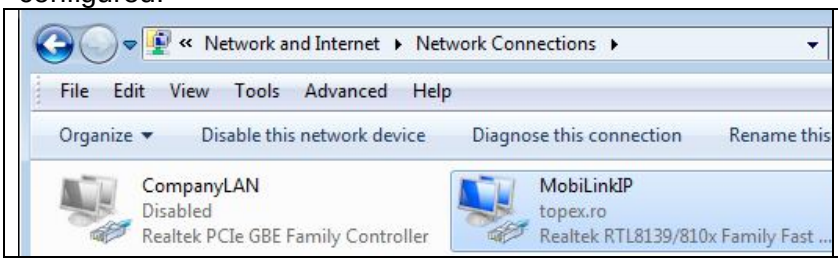
6.2 Using the web interface

The default address of the webpage of the ROHDE & SCHWARZ TOPEX S.A. MobiLinkIP device is **192.168.173.1** , and the type of connection is **https:**
It is recommended to use the default IP address - if the configuration of the local network allows this!



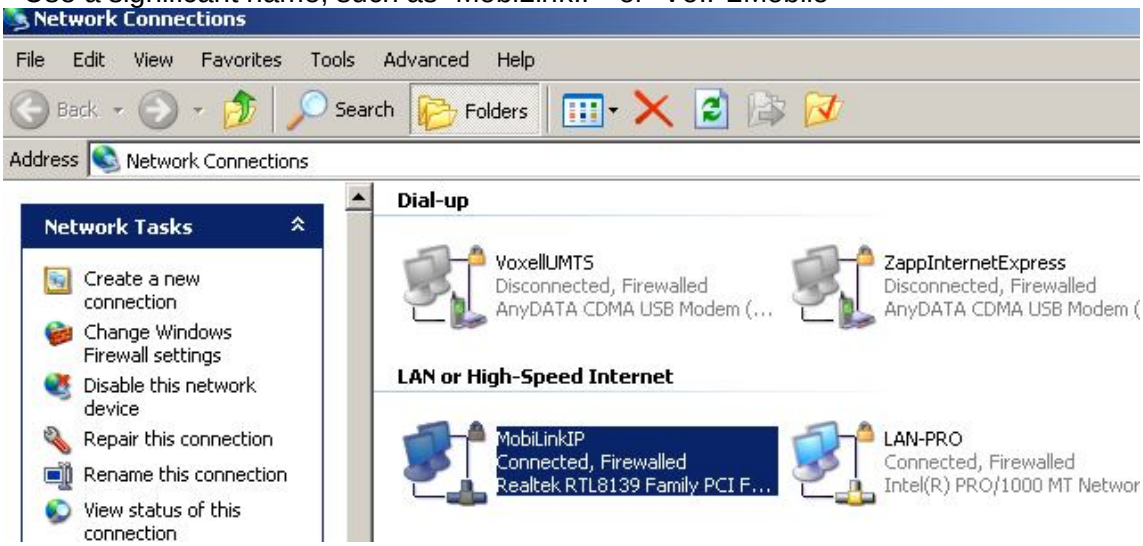
6.2.1 Set up a connection

Establish an Ethernet connection to be used with the MobiLinkIP unit that needs to be configured.



Go to "Network Connections" on the computer and define a connection to be used for the MobiLinkIP gateway.

Use a significant name, such as "MobiLinkIP" or "VoIP2Mobile"

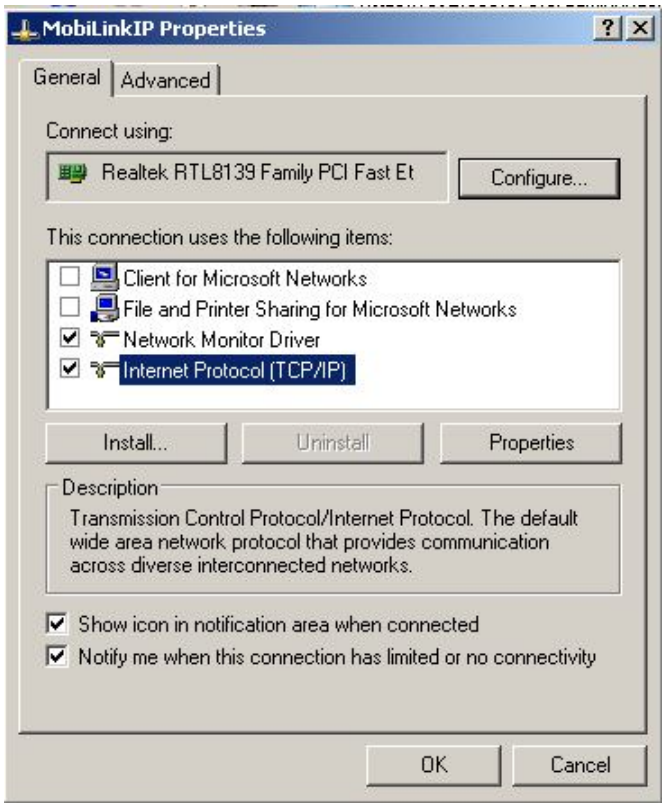


From the network adapters (network cards), select the one which is connected via Ethernet cable to the MobiLink equipment.

In this example, it is the network board type "Realtek RTL8139 Family PCI Fast Ethernet NIC"

Check the box "Internet Protocol (TCP/IP) and click the button "Properties" to configure your PC.

Configure the connection to MobiLinkIP either manually or automatically.



Automatic IP

The simplest way is to set the network adapter to get its IP address automatically from the DHCP server of the local network, where the MobiLinkIP unit is connected. The server will provide the PC or netbook with the correct IP address, DNS and Gateway. **This only works if you local network is of the class 192.168.xxx.yyy, compatible with the default IP address of MobiLink IP**.

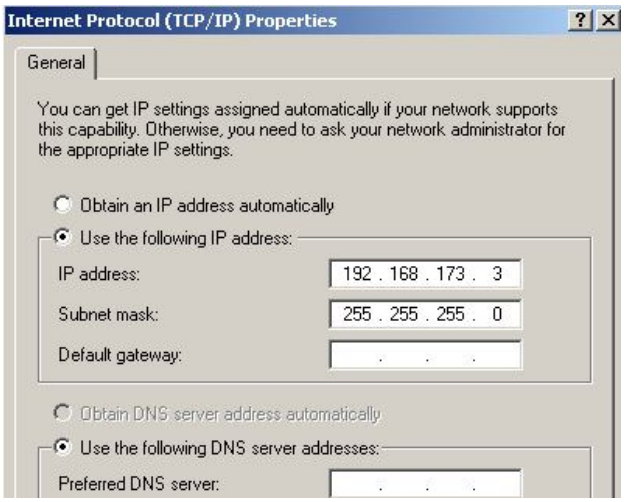
Manual settings

As an alternative, you can set the network parameters manually. By default, MobiLinkIP has the IP address *192.168.173.1* and the Netmask *255.255.0.0*, settings which are used in the example below. It does make sense to use manual settings for *network configurations incompatible with the default IP settings*; you **must** use manual settings when the local network has some special requirements, which the automatic configuration cannot satisfy, such as:

- different range of non-routable addresses used, like 10.*.*.* or 172.16.*.*; In this case you must first set you computer manually to the range of addresses that MobiLink IP can "see", then configure MobiLink for the requirements of your particular network, and finally revert to using DHCP in your network, but with MobiLink IP now accessible.
- several MobiLinkIP equipment used in the same LAN. More than two GSM modules may be required, thus several VoIP-2-Mobile gateways must be connected in your LAN. In this case the first unit can have the default address, but for the next ones you should assign other addresses, such as consecutive ones: *.*.*.2, *.*.*.3, *.*.*.4 etc.

In case of manual settings, in "Internet Protocol Properties" fill in the corresponding values:

- the IP address could be from 192.168.173.2 up to 192.168.173.254
- the Subnet mask could be the standard 255.255.255.0, or wider 255.255.0.0
- the Default gateway and "Preferred DNS server" fields may be lefty empty!



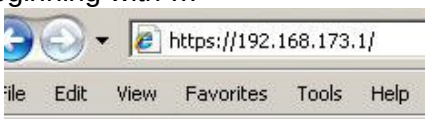
In the status bar at the bottom of the screen the link icon should be blinking, and a message will show up: "MobiLinkIP is now connected"



Note: When a Proxy Server is used for the local network, set an exception for the Rohde & Schwarz Topex S.A. VoIP2Mobile unit, because access to the MobiLink will not be possible.

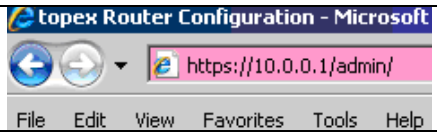
6.2.2 Connecting to the MobiLink

Enter the IP address of the MobiLinkIP device (by default **192.168.173.1**) in the list of exceptions for the Proxy server: "Do not use proxy server for addresses beginning with …"
To configure the MobiLink IP product using the web interface, just open a favorite web browser and type the default IP address as the URL: **https://192.168.173.1**



Remember that the default gateway used by MobiLink IP has the IP address of **192.168.173.2.**

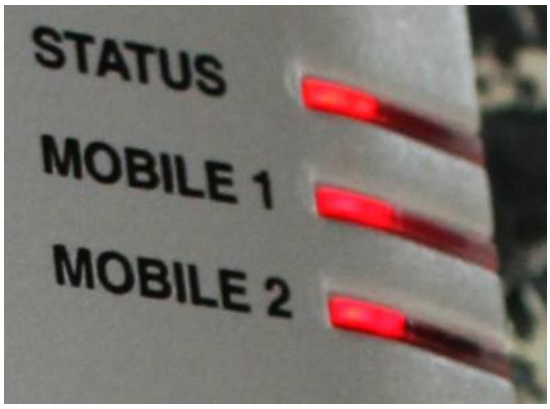
If connecting to the MobiLinkIP equipment is not possible because of problems in the settings of the IP address, go back to the factory default settings. Press the "RESET" button for at least three seconds. The equipment reboots and starts operating with **the factory default settings**.
These include the IP address 192.168.173.1, allowing you to connect to the Rohde & Schwarz Topex S.A. VoIP2Mobile in order to configure it. After reaching the configuration web pages, one may change the IP address of the device according to personal requirements.

For instance, you can use addresses in the range https://172.27.168.xxx/ or **https://10.0.0.1**, as shown in this example:	

Hardware Reset

To perform such a hardware reset to factory defaults, you must follow the procedure described next, simply pressing the recessed RST button won't work. So you must follow these steps:

- shut down the MobiLinkIP device (unplug the power jack)
- press the RST button and keep it pressed
- power up MobiLinkIP
- wait until all three LEDs light up in red, as shown in the picture below, and then leave the RST button.



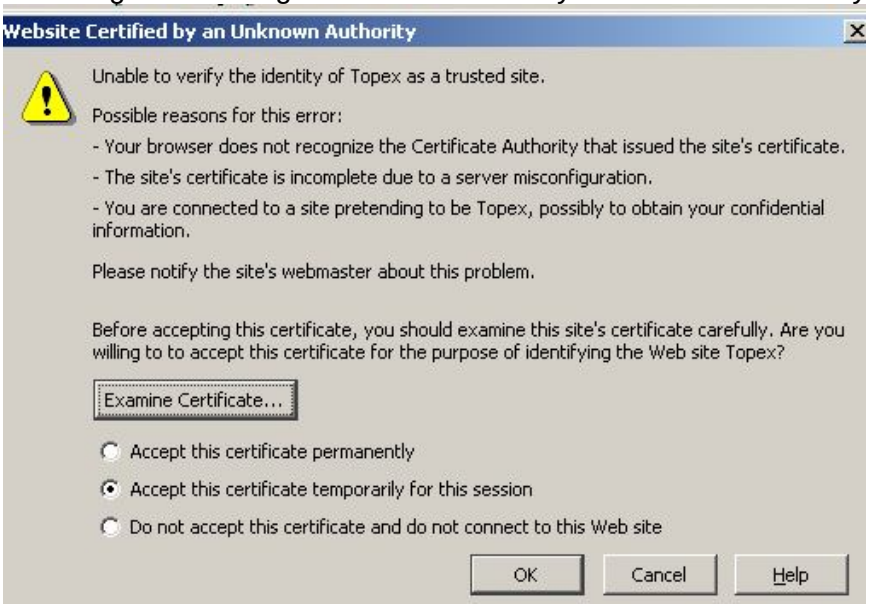
Now the equipment performs a reset with return to factory default settings.

This does NOT happen if you don't follow exactly the procedure described above – for instance, if you continue to press down the RST button after the three indicators have turned on in red color!

Note that the MobiLinkIP uses a **secure web connection** (https instead of the usual http) so one may get several warning messages for example:



or similar warnings mentioning “Website Certified by an Unknown Authority”:



Click „Yes”, „OK” or „Accept” to continue.
Type “OK” to accept the certificate for the MobiLink website.
Other “Security Error” messages may warn about “Domain Name Mismatch”, referring to the security certificate. Again click “OK” to continue.



One may receive the warning “You have requested an encrypted page” or “You are about to view pages over a secure connection”.



This is **norma**l; it shows connection to MobiLinkIP over a **secure, encrypted link - HTTPS**.

The secure connection is confirmed by the “padlock” symbol that shows up in the status bar at the bottom of the screen, indicating a secure (encrypted) connection. MobiLinkIP uses 128-bit SSL encryption to prevent hackers from capturing passwords and sensitive data which is the same security used by banks and the military.



Internet Explorer shows the padlock icon only when everything on the entire webpage is encrypted. But even when the browser doesn't show a padlock, the "https://" address means the data is still encrypted.

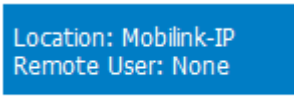
Other browsers, such as Mozilla Firefox, will also show a lock icon near the MobiLink connection, together with a message that says: “Authenticated by Topex S.A. ”.



From the fist configuration screen you may select either:

- **Administration** (management, configuration pages)
- **SMS Pages** (send and receive text messages)
- Rohde & Schwarz **Topex** S.A. webpage

Click the link of interest





6.2.3 Log-in

Now the user will be asked to enter a user name and a password to access the configuration page of the device MobiLink from Rohde & Schwarz Topex S.A. .

For the SMS pages, you should type the name **"user"** and associated default password **"99user11",** to enter the SMS send / receive pages:



For the Administration pages, you must type the user name "admin" and associated default password "99admin11", to be able to manage the equipment:

Correspondingly, after successful log-in you may change the password for each of the users (you should do this, to prevent unauthorized access!).

Persistence of authentication

Normally, if you have logged-in as User, then you wand to enter as Administrator, or vice-versa, you should close down the browser, then open it again and type the address of the MobiLink IP configuration page: https://192.168.173.1 in order to log-in with the user name that you want. But if you have entered once in the web interface the passwords both for User and respectively Admin, then when you want to log-in a second time either as User or Admin, it won't request a password from you anymore!

Now when you type again the address https://192.168.173.1 into the web browser and perform click either over SMS Pages or Administration Pages (from the same computer!), it won't ask you anymore for name and password … once authentication is done form a certain computer, you don't need to do it again, unless you restart the computer!

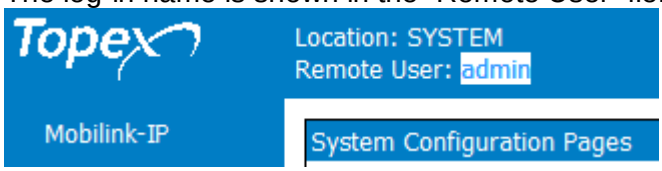


For the administrator of the system network, the default user name is **admin** and the password is **99admin11**.

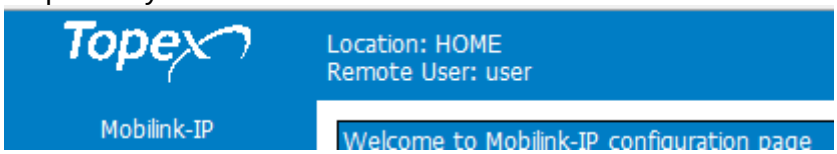
Later, this password may be changed using the web configuration page, as described in the paragraph about Password.

For security reasons, it is strongly recommended to change the default password with one of own choice as soon as possible Also, do NOT mark the checkbox "Remember my password" in the browser

The log-in name is shown in the “Remote User” field, below the “Location” information:



respectively:



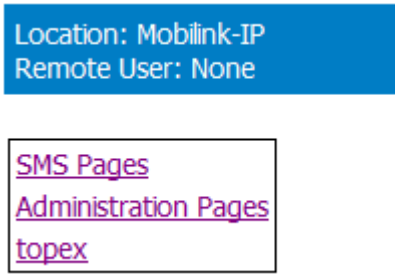
When typing a different user name, or if entering an incorrect password, or when you press cancel, the following error message will be displayed:



“**401 Unauthorized**”!

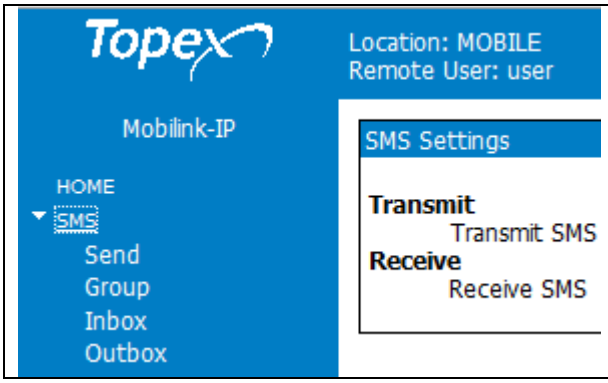
Connect again and be careful to enter the correct name and password.
Following successful log-in, the main page for the ROHDE & SCHWARZ TOPEX S.A. MobiLinkIP VoIP gateway should be shown on screen.

6.2.4 Dual log-in



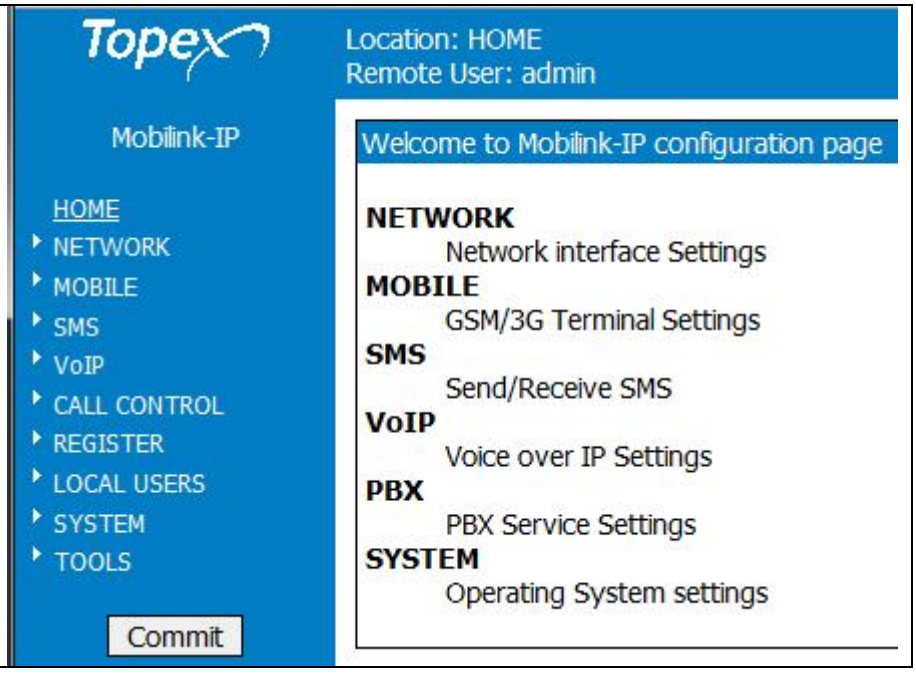
Depending on the link and user chosen, you will see:

- either the SMS Page (when you log-in as **user**)
- or the administration pages (if you log-in as **admin**), which of course also include the settings for SMS:



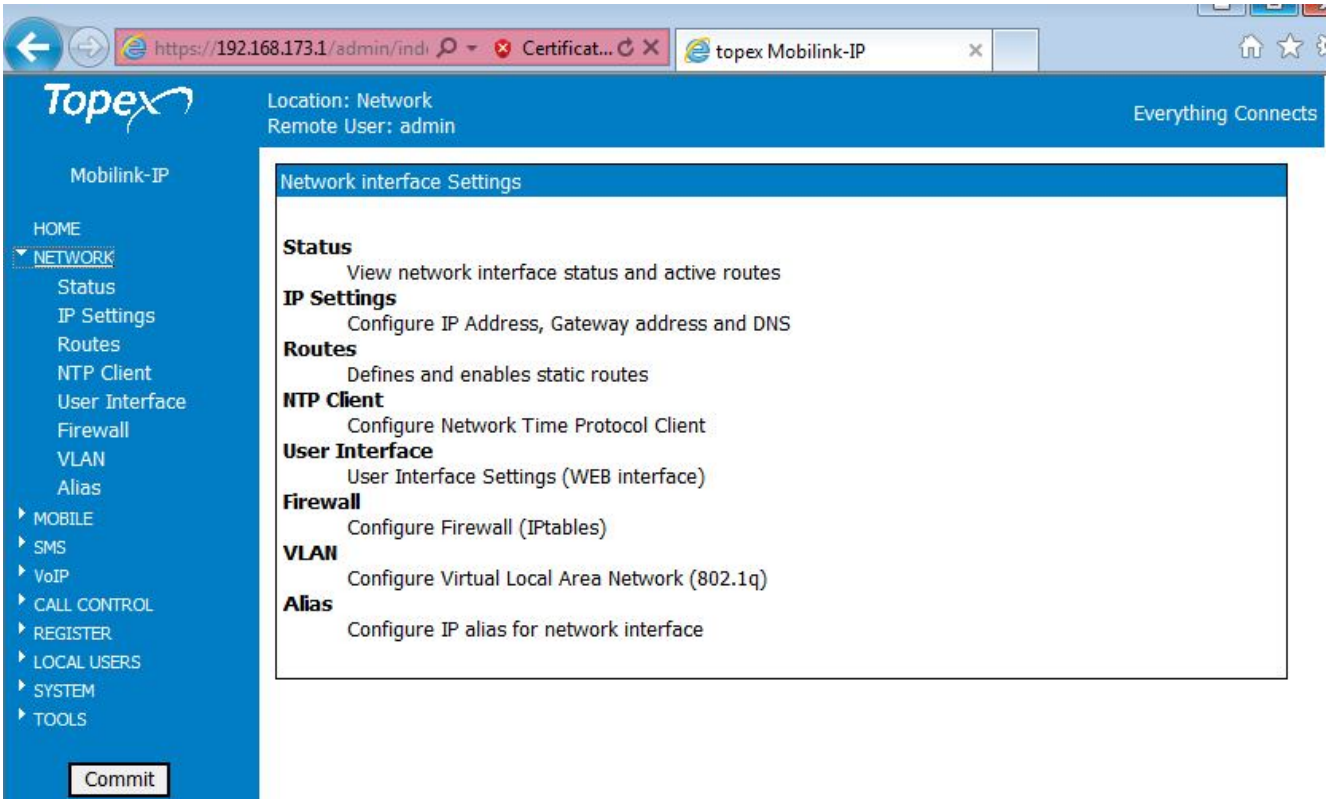
User Log-In:

Administrator Log-In:



6.2.5 Menu Items

When you log-in as **Admin**, there are several sections (Menu items) on the configuration page of MobiLinkIP:



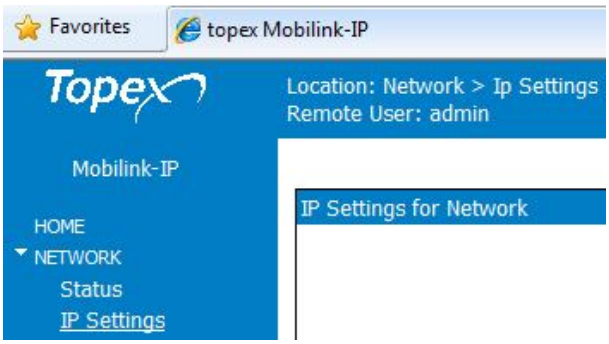
These sections allow modifying the settings for:

- **NETWORK**: all settings for the local wired (Ethernet) network and virtual interfaces, including firewall, NTP, alias and VLAN
- **MOBILE:** parameters for the 2G or 3G mobile voice / data networks, AT commands
- **SMS:** send and receive messages from web interface, performs SMS-2-email and e-mail to SMS conversions, send out group messages, shows inbox and outbox
- **VoIP:** parameters related to the Voice over IP functions;
- **CALL CONTROL:** all settings related to the PBX application running on MobiLink IP, which performs all the call management and control tasks;;
- **REGISTER:** Settings for registration service of remote and local users
- **LOCAL USERS:** parameters for registration service of Local Users (SIP and Mobile);
- **SYSTEM:** Performs operating system functions (update, change of password, logs), Time, Crontab and shows current status
- **TOOLS:** miscellaneous instruments for debugging and optimization (advanced settings - capture logs and tcpdump, send a ICMP ECHO_REQUEST to network hosts.

Depending upon the actual firmware version running on the MobiLinkIP gateway, one may or may not have access to all these configuration sections or sub-sections (features, services).

The Menu bar is located to the left, and features the button **Commit** at the bottom.

On top of the web page, next to the Rohde & Schwarz Topex S.A. logo, is a “Location” indication, which reminds the user exactly where he is on the Web interface. In this example, the section is **Network** and the subsection **IP settings** (IP Settings for the Ethernet connection).
Under the Location information is “Remote User”, which shows the name that was used for log-in, User or respectively Admin in this example.



General Notes:
There are two types of pages, ‘Status’ and ‘Settings’.

-The **Status** pages only display the state of different items of MobiLink IP, while the **Settings** pages allow you to modify (change) various parameters and settings.
- The Status pages have at the bottom a “Reload” button, with an explanation message below it.
You must click the button to refresh the page – it makes the equipment read again the page, to be sure you see the latest values:



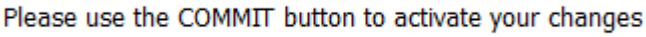
- At the bottom of every ‘Settings’ page you can see these three buttons:



The button **Save** is used to save the changes performed, the **Cancel** button aborts the changes (closes the window without modifying the current settings), and the **Default** button will reset the values in the current page to the default (initial) configuration.

When changing the settings in any page, press the “Save” button keep these settings. Otherwise, clicking any other link, reaching another configuration page, the modifications performed will be lost.

- Also, the ‘Settings’ pages have a reminder bottom:



This message warns you that using **Save** is not enough, you must also use the Commit button in the Menu at the left of the screen, if you want your changes to be persistent – to be kept by MobiLink IP after a reboot (restart after power down).

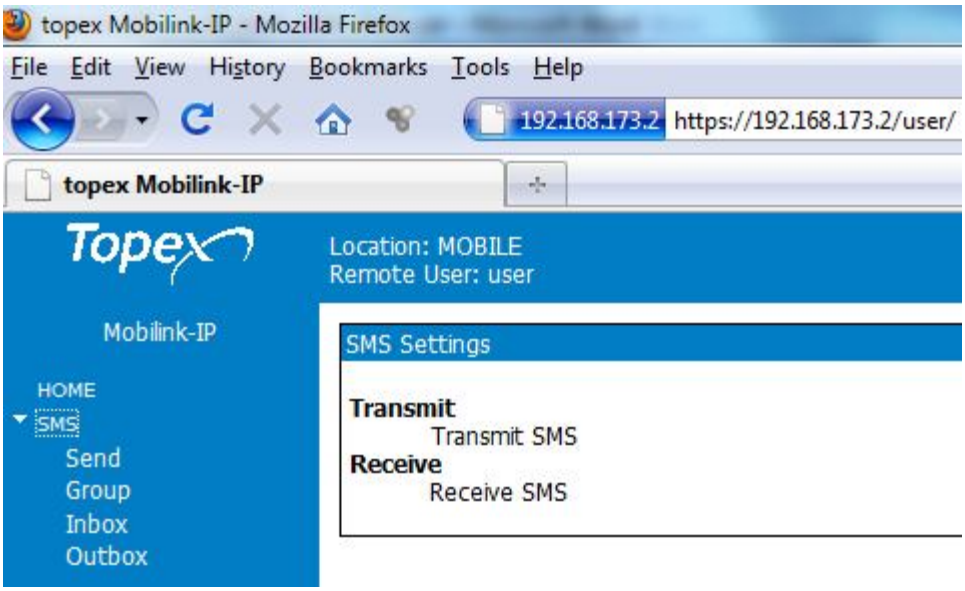
- Some of the ‘Settings’ pages feature **four** buttons at the bottom:



This is the situation of the pages with no pre-defined settings, where the table is initially empty, so you must use the button **New** to create a new entry into the table, then edit it!

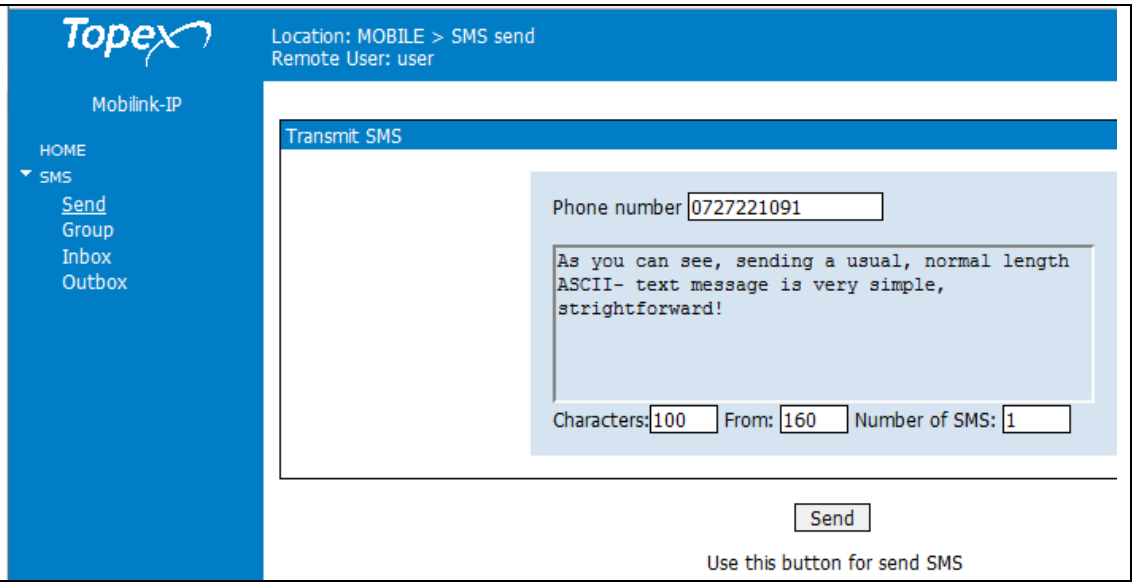
6.2.6 SMS Pages (log-in as user)

When you log as **User**, you don't have the full menu, you have access only to the page for text messages:



Moreover, you can only send messages and see the received messages, you don't have access to the Settings for SMS and email-to-SMS features.

Send
To send out a text message, simply enter the destination phone number, type or copy-and-paste the text of the message, then press the Send button located at the bottom!

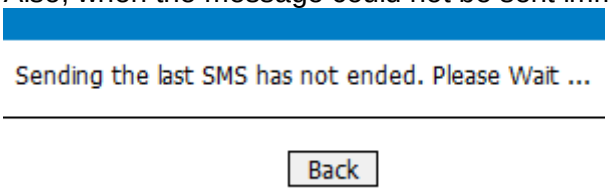


You will see the message "SMS is sending, please wait":



Then, in case of successful transmission, you will see the confirmation in the Outbox.

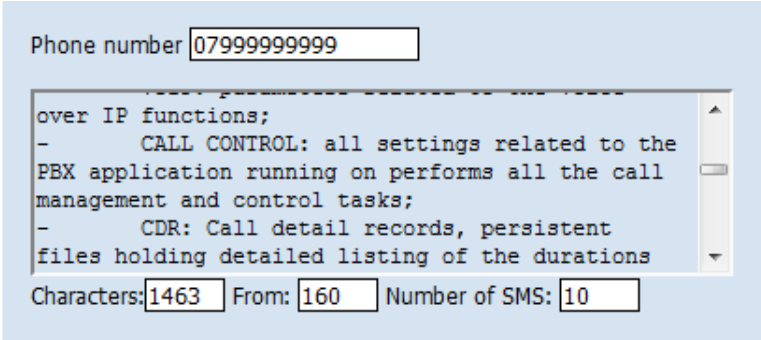
Also, when the message could not be sent immediately, you will see this warning:



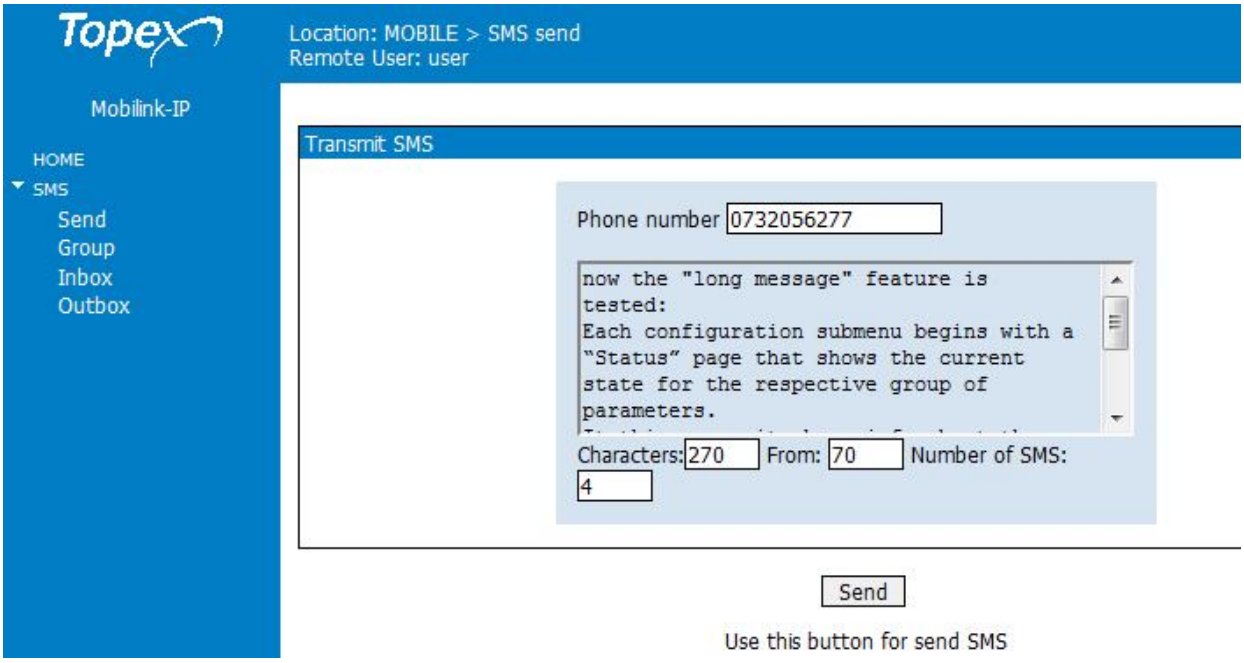
Use the Refresh or Reload button of your browser to get out of this page.

Long Messages

The maximum number of characters for SMS is 160 characters in case of ASCII messages or 70 in case of non-ASCII characters.



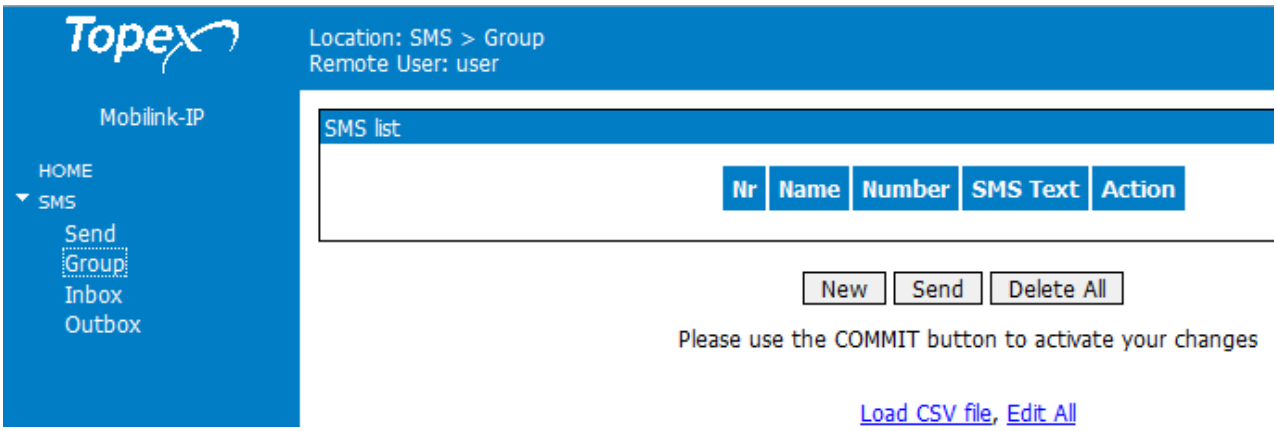
But you **can** send even longer text messages – they will be broken into several consecutive SMS, and sent one after another to the destination number.
The last box at the bottom of the "Transmit SMS" window shows you the "number of SMS" – this is 1 (one) for a normal message, less than 160 characters length, or 4 (four) in the example below:



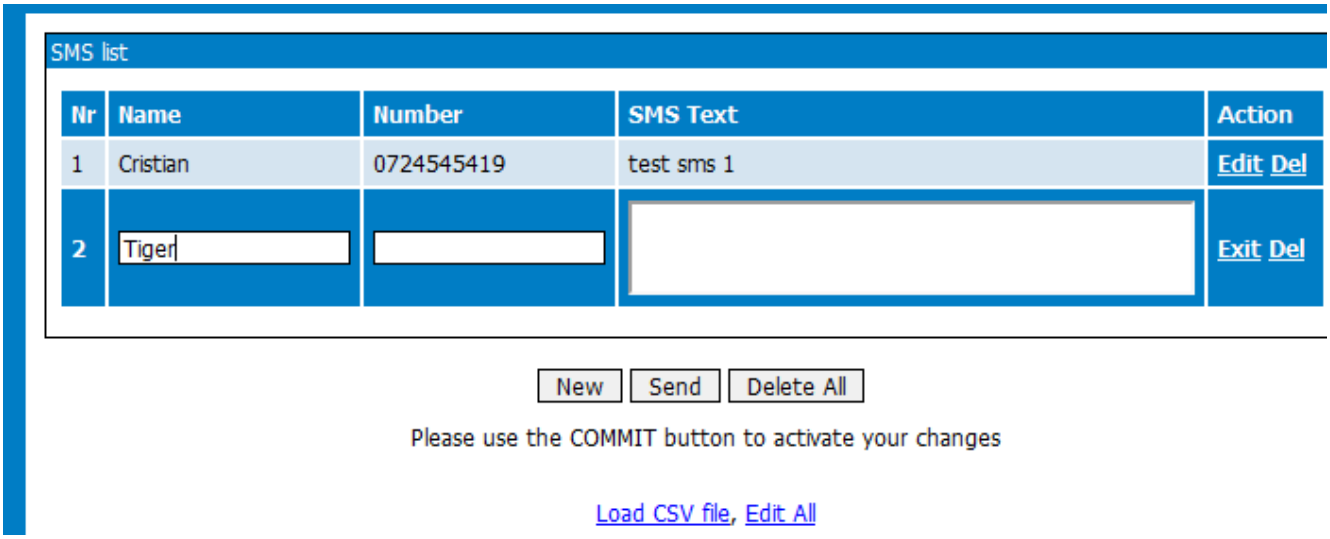
This means that the long message in the example above, with 270 non-ASCII characters, will be sent out as a succession of four SMS messages with a maximum length of 70 characters each!

Group
This feature allows you to send group messages, that is text messages to several phone numbers, in single operation.

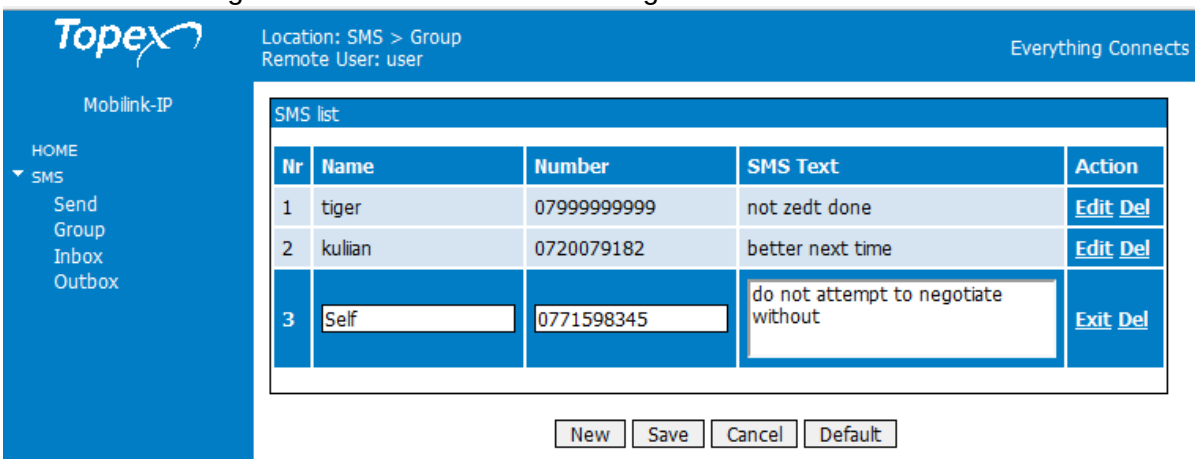
At first, the SMS list is empty, use **New** to create a new record and **Edit** to modify it:



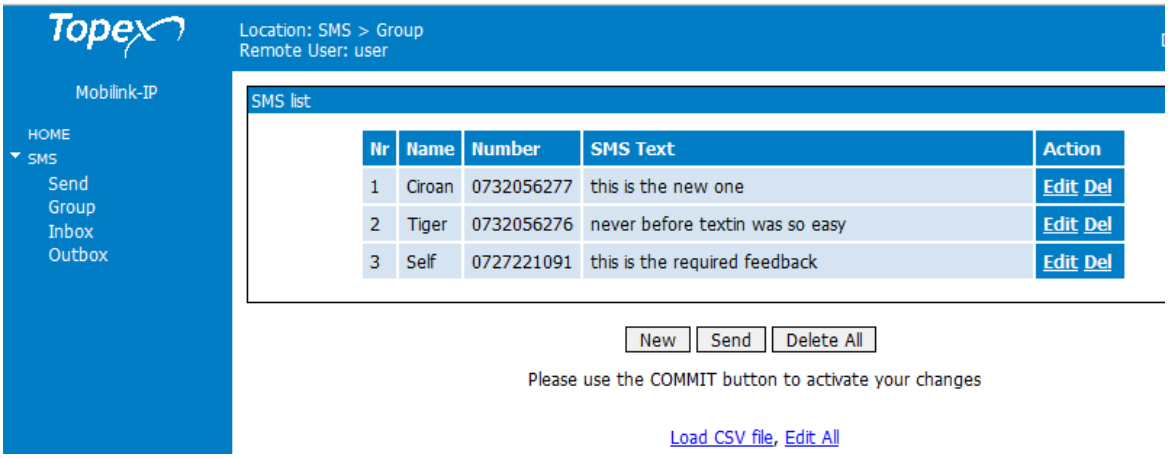
The first field is **the name** of the recipient of the message. This name is meaningful for the human operator only, MobiLink IP has no use for it. The next field is the destination **phone number**, and the last one, **the text** of the SMS message to be transmitted:



After you finished editing all fields in a row, the buttons at the bottom change, allowing you to **Save** the edited messages or to abort the current editing with **Cancel**.

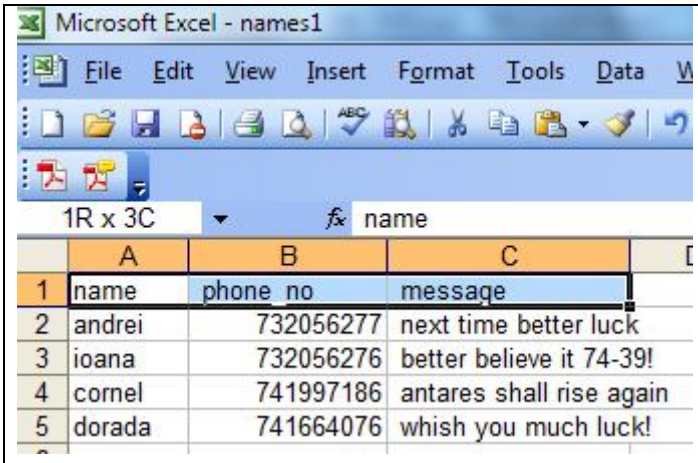


When you have finished editing all rows, the buttons change again, now you have the option to press **Send** to transmit the messages, or **Delete All** to delete all the rows in a single operation.



Load CSV

One if the links at the bottom of is “Load CSV file”.



You can use it to load a **CSV** (comma separated value) file previously created that holds the names, telephone numbers and messages to be sent.

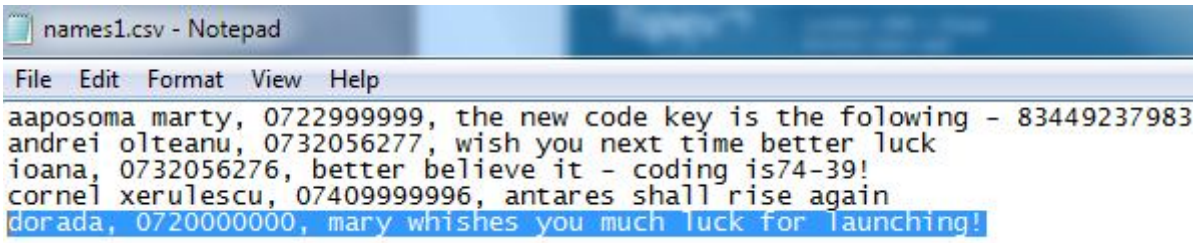
Such a file may be created by using Microsoft Excel or a simple text editor, such as Notepad.

The values for name, telephone number, and text of the message must be **separated by commas**.

The first row “name, phone no, message” is for illustration purpose only, it will NOT be understood by MobiLink IP!

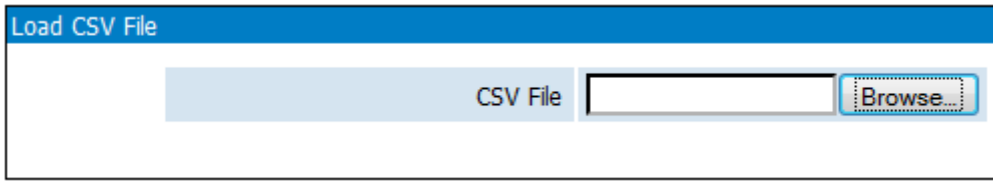
Notes:

- when you use the Microsoft EXCEL spreadsheet, the format for the telephone number must be text (if you use number format, the zero "0" will NOT be taken into account!).
- if you create / edit the CSV file in Notepad, it must contain: **name, destination phone number, text of the SMS to be sent:**

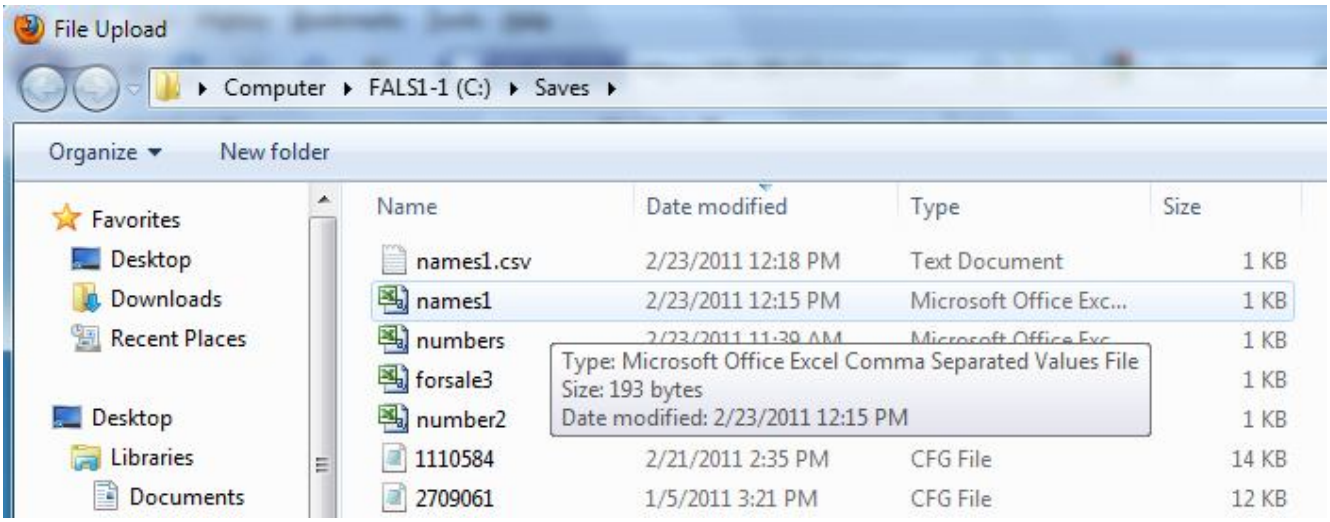


- since the comma is the separator between fields, the <u>text of the SMS must NOT contain any comma!</u>

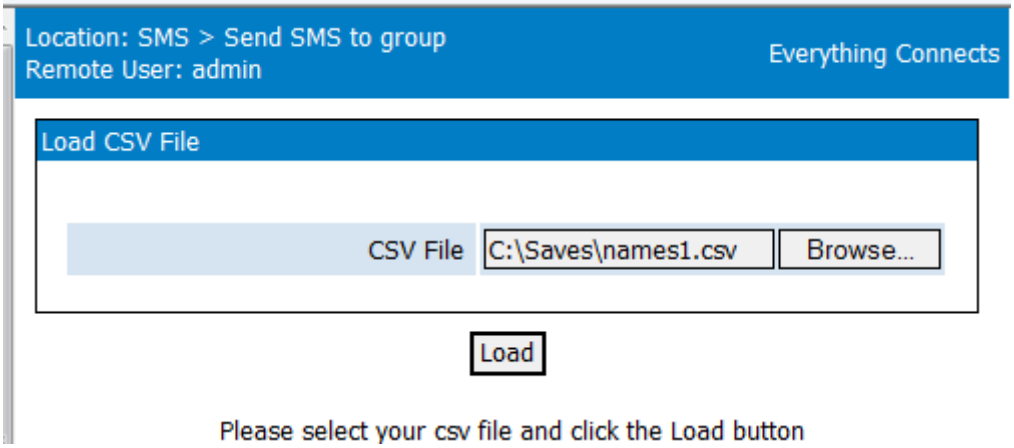
Use the **Browse** button to look for the .csv or .txt file to be loaded:



Navigate in the folders of your computer, and select the .csv file of interest to you:



Then use the button **Load** to load the respective file into the MobiLink IP equipment:



In the web interface of MobiLink IP, the loaded SMS file will look like this :



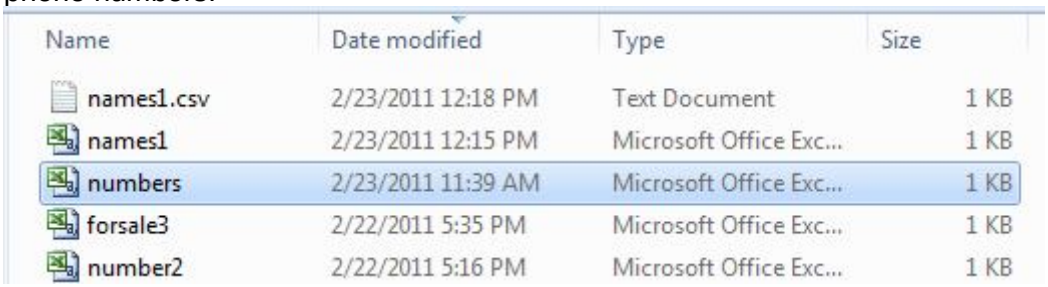
You can review, edit or delete each row of the SMS list (every line corresponds to a SMS message), then press Send to send out all the messages.
Of course, the transmission won't be simultaneous; MobiLink IP sends out the messages one after another, starting with the one located at the bottom.

Following a successful transmission, the SMS messages are automatically deleted.

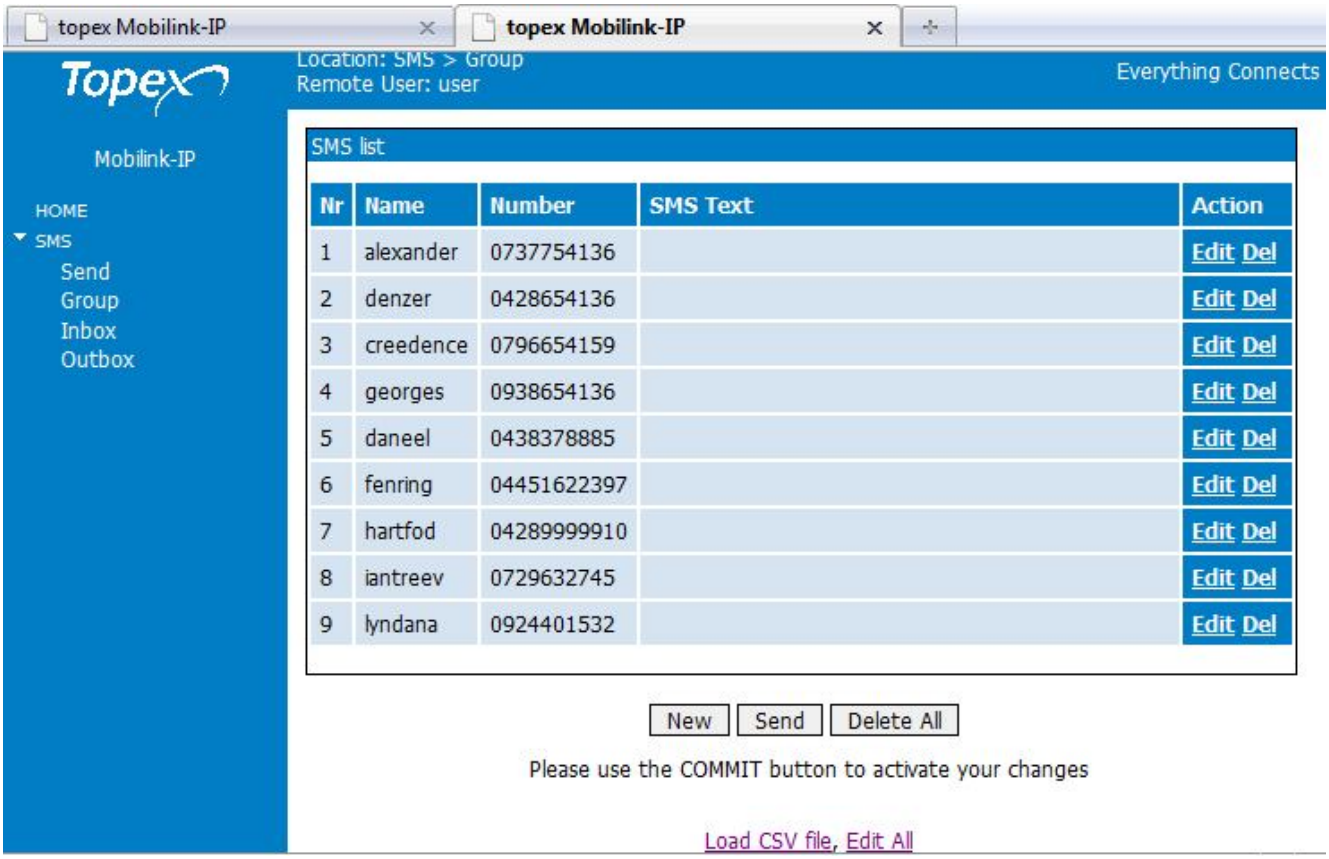
if you want to erase all the messages before transmission, you can delete all the rows in the SMS list by using the button "**Delete All**" located at the right, below the SMS list.

Group sending

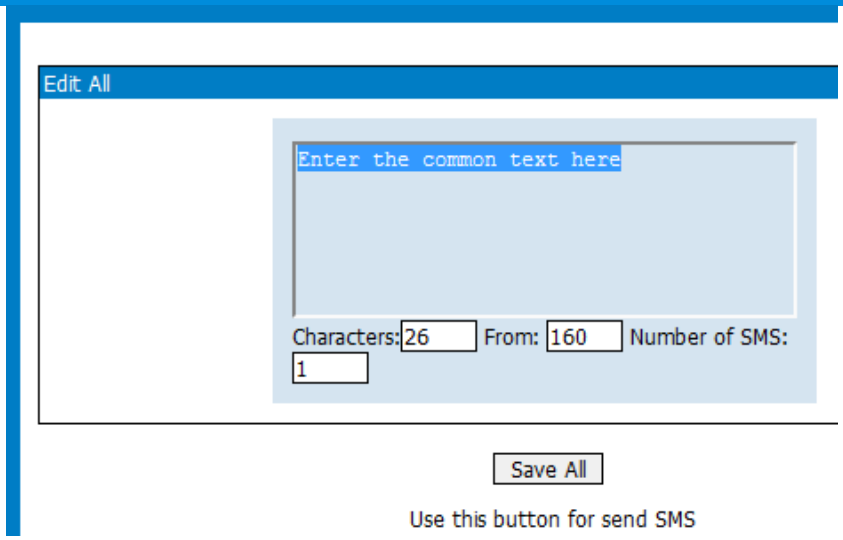
A variant of the group SMS operation is when you need to send a single message to several recipients (phone numbers) – something as mass mailing.
For this particular case, you must prepare a CSV file that contains only names and telephone numbers, the “text” filed is empty.
To send out the same text message to several destinations, load the CSV file with the corresponding phone numbers:



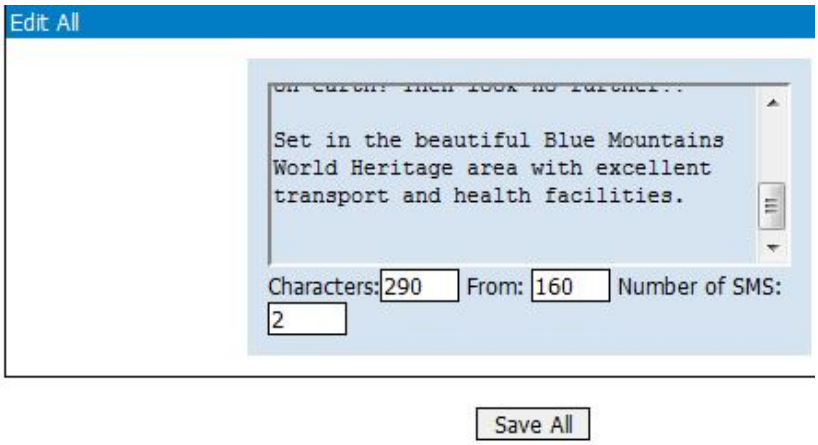
You will see a SMS list with names and corresponding telephone numbers, but without any text for the SMS message to be sent out:



Now use the link “Edit All” located at the bottom right, to edit all the SMS Text fields at once:



In this window, you can either enter the text by typing, or paste it from a location where you copy the text of interest:



Use “Save All” button to save this text into all the rows of the SMS list:

SMS list

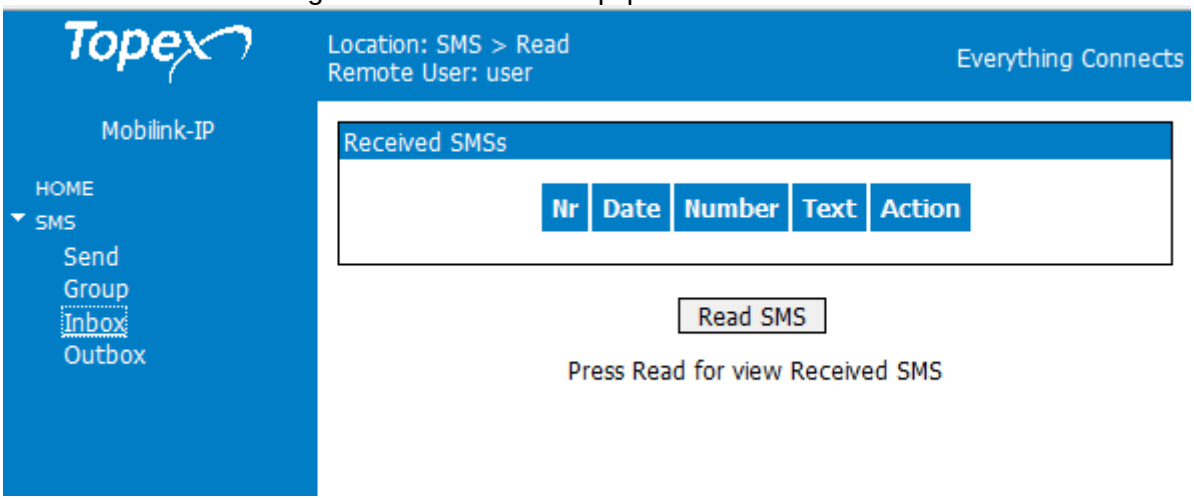
Nr	Name	Number	SMS Text	Action
1	alexander	0737754136	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
2	denzer	0428654136	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
3	creedence	0796654159	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
4	georges	0938654136	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
5	daneel	0438378885	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
6	fenring	04451622397	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
7	hartfod	04289999910	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
8	iantreev	0729632745	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
9	lyndana	0924401532	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del

New Send Delete All

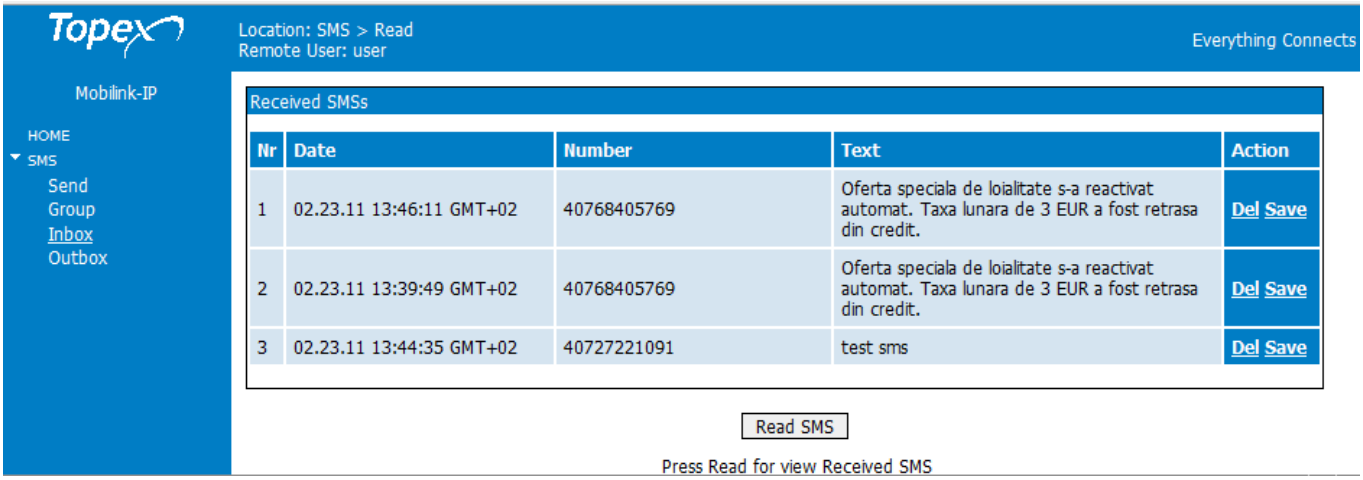
After a final review, where you can edit or delete the current rows or add a new one, press the button **Send** at the bottom of the list to send out the respective text to all the phone numbers in the list!

Inbox

Shows the SMS messages received on the equipment.



Press the button “Read SMS” to see the list of text messages received by the SIM cards of the MobiLink IP equipment.



Date: shows not only the date, but also the time when the message has been sent, up to seconds. Also, the time zone, such as GMT+2 in case of Bucharest. Remember, this is not the time when the SMS was received by MobiLink IP, but rather when it has been transmitted, usually set by the mobile carrier.

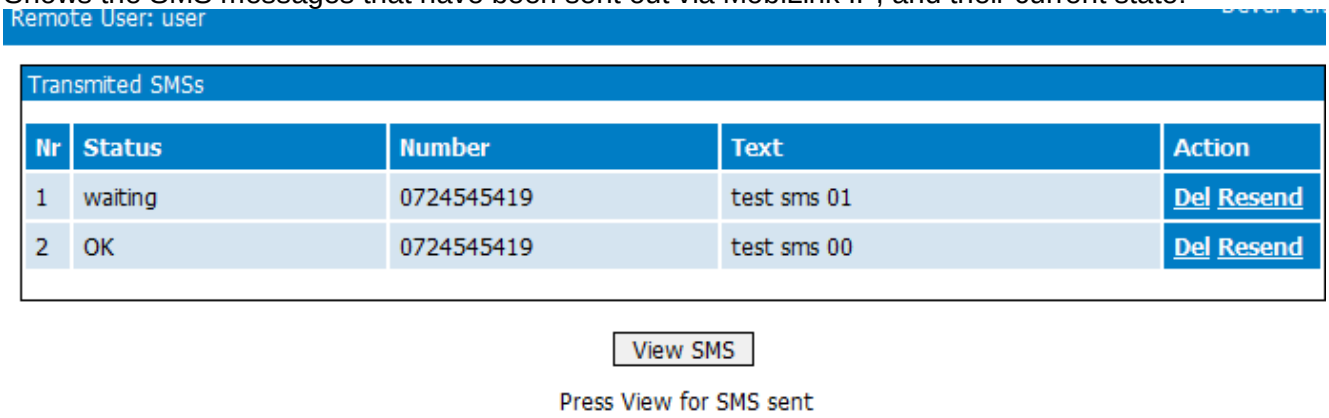
Number: phone number that has sent the SMS.

Text: the text of the message.

You can Delete or Save each of the received SMSs. These messages are stored in the volatile memory of the equipment, so if one SMS is of high interest, it should be save onto your computer, because it will be lost each time MobiLink IP is re-booted.

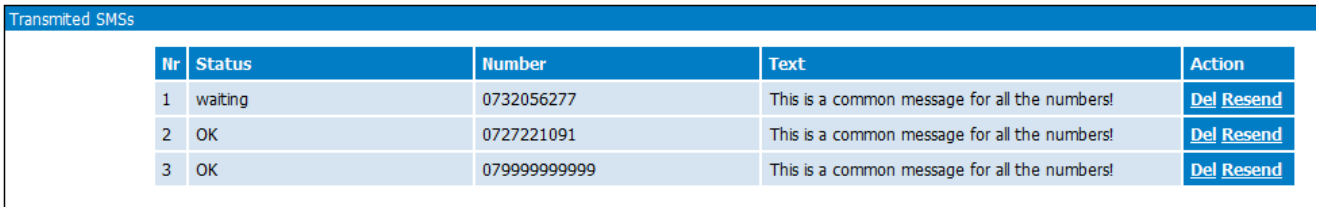
Outbox

Shows the SMS messages that have been sent out via MobiLink IP, and their current state:

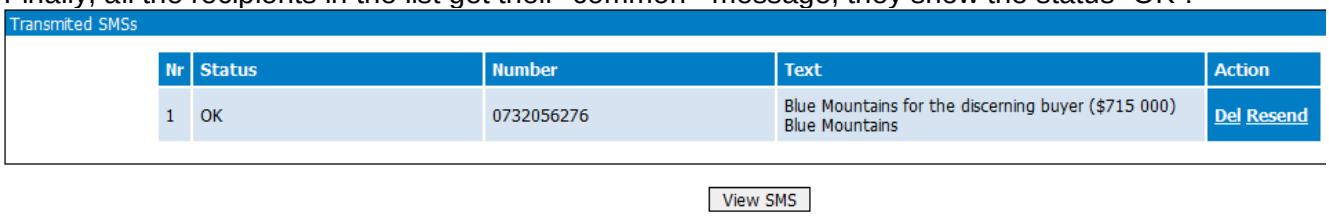


Since the messages are sent out starting with the one at the bottom, it is normal that SMS 2 has already been successfully sent, hence the message "OK", while SMS 1 is still "waiting" to be transmitted.

In the next example, while sending out a "group" message (same text sent towards three recipients), the SMS has been successfully sent to 2 and 3, while 1 must still wait – his message is in the process of being transmitted:



Finally, all the recipients in the list get their "common" message, they show the status "OK":



Action:

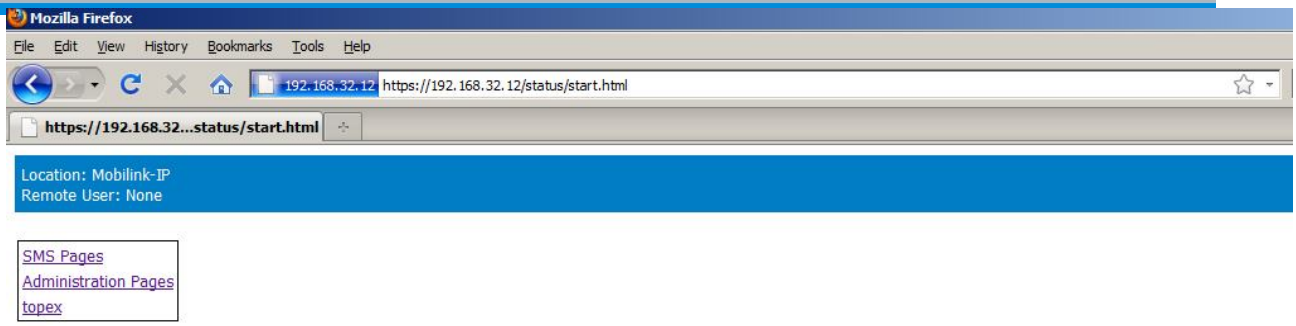
In Outbox, the field Action lets you **Del**ete the SMS which have been sent, or **Resend** them.
When a new session of sending out SMS messages, they will be automatically erased.

Switching users

Normally, if you have logged-in as User, then you wand to enter as Administrator, or vice-versa, you should close down the browser, then open it again and type the address of the MobiLink IP configuration page: https://192.168.173.1 in order to log-in with the user name that you want.

But if you have entered once in the web interface the passwords both for User and respectively Admin, then when you want to log-in a second time either as User or Admin, it won't request a password from you anymore!

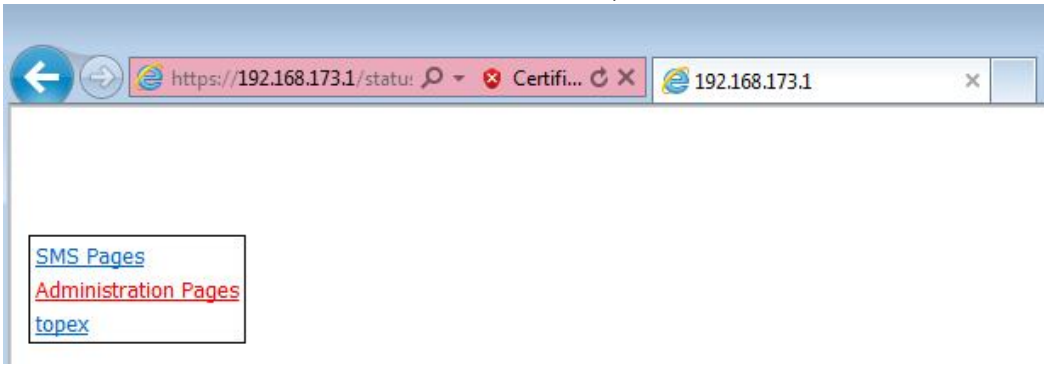
After you typed " https://192.168.173.1 " fir the first time in the web browser, Remote User shows None.



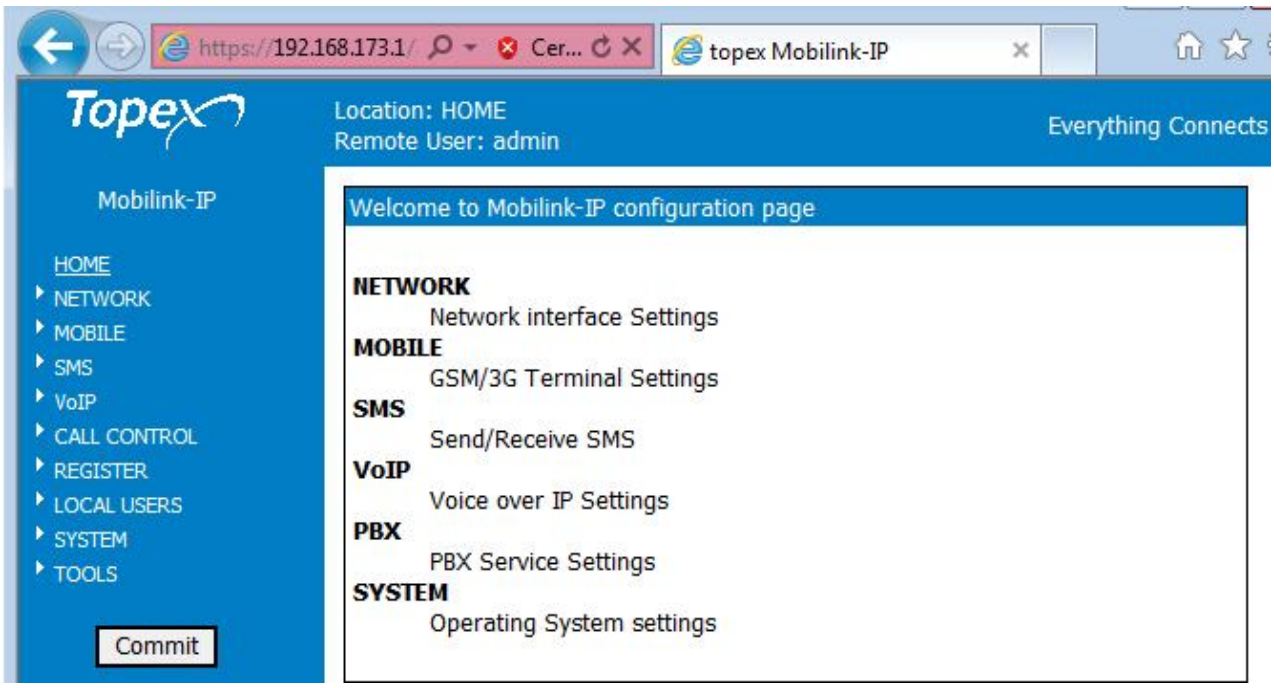
Click the link SMS Pages and it will ask you for username and password: user/ 99user11 (log-in as User)
Enter again in the web browser the address of MobiLink IP (default https://192.168.173.1)
Click the link Administration Pages and it will ask you for username and password: admin/ 99admin11 (log-in as Admin)

Note: *Once authentication is done form a certain computer, you don't need to do it again, unless you restart the computer!*
After logging-in a fist time, when you type again the address https://192.168.173.1 into the web browser and perform click either over SMS Pages or Administration Pages (from the same computer!), it won't ask you anymore for name and password …

Logging-in as Admin
Form the initial welcome screen of MobiLink IP, choose the link "**Administration Pages**":



Notice that this time the remote user listed under HOME is “admin”:



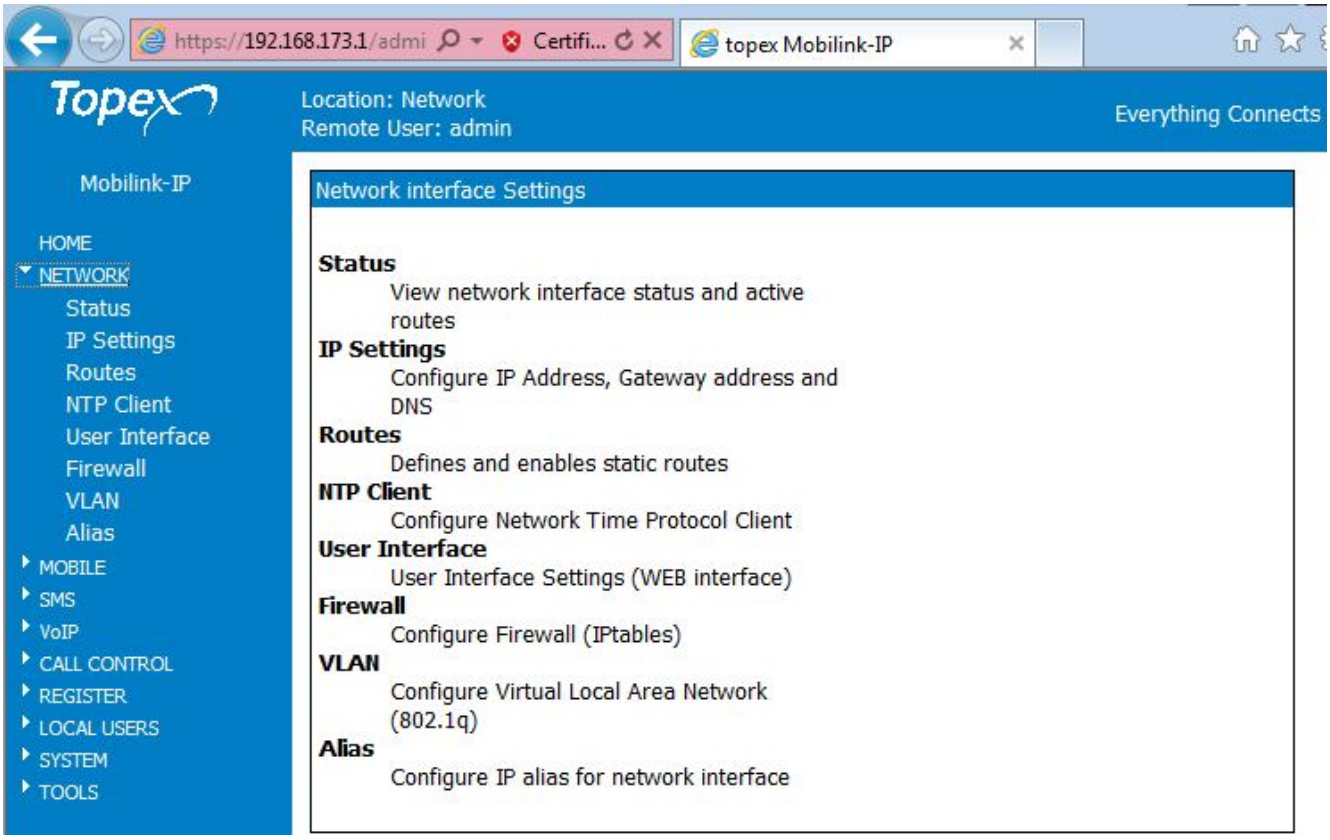
When you log-in to MobiLink-IP as administrator (username ***admin*** and corresponding default password ***99admin 11***) you have access to all the features and settings.

Remember to change as soon as possible this generic password with one of your own!

The first configuration page is NETWORK.

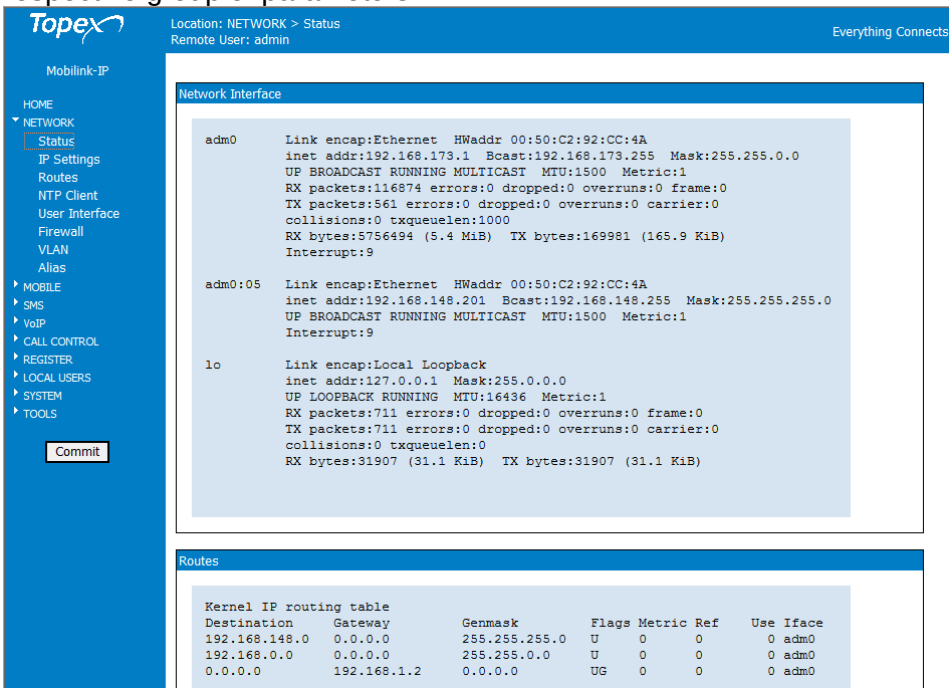
6.3 NETWORK

This group features the pages of settings related to the local wired Ethernet network, for IP, routes, for the NTP Client and respectively for the firewall (IP tables):

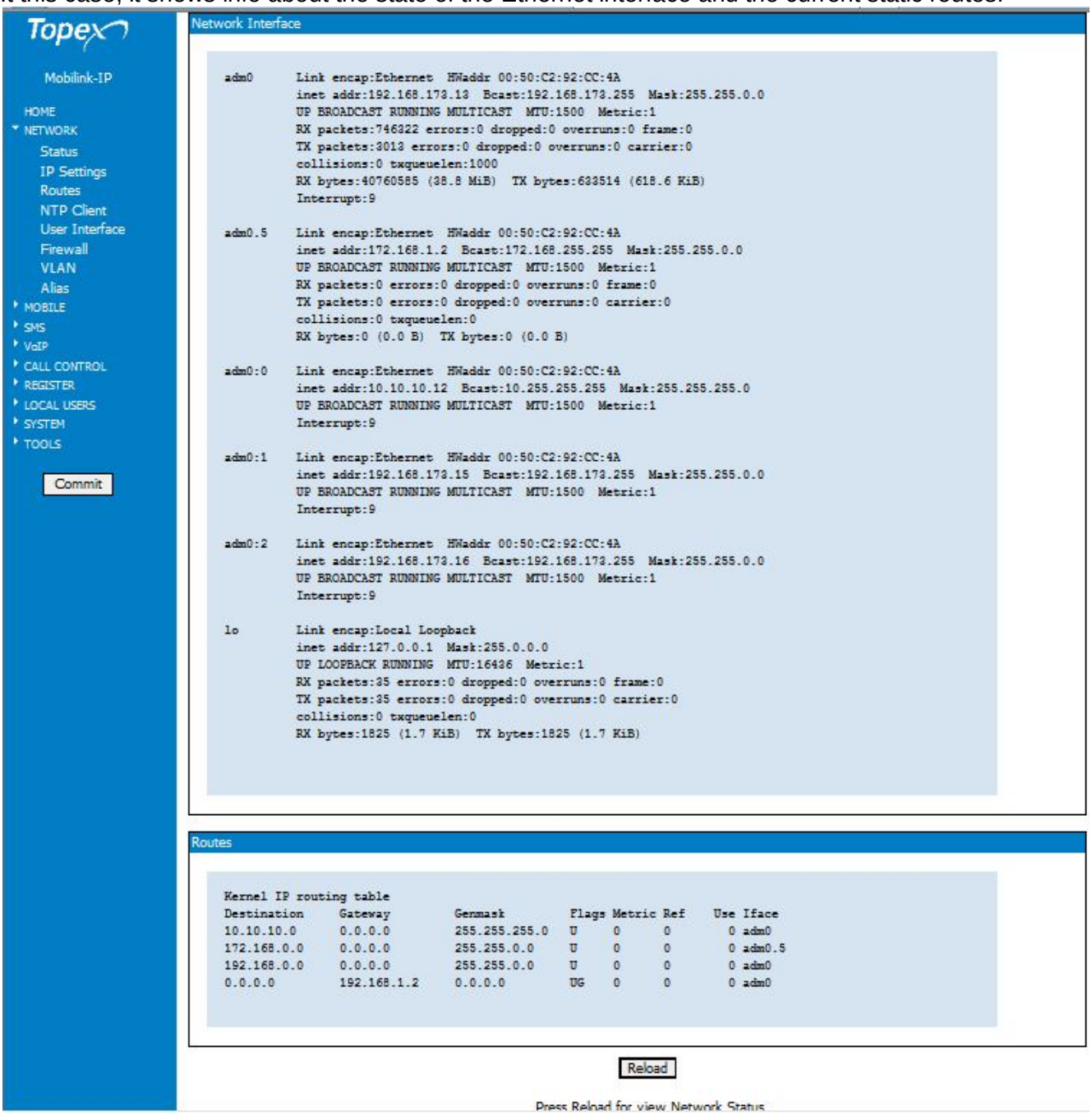


6.3.1 Status

Each configuration submenu begins with a “Status” page that shows the current state for the respective group of parameters.



It this case, it shows info about the state of the Ethernet interface and the current static routes:



Network Interface

This is the detailed information about the Ethernet network interface of the MobiLinkIP. It contains several similar groups of network parameters:

Adm0

```
adm0      Link encap:Ethernet  HWaddr 00:50:C2:92:CC:4A
          inet addr:192.168.173.4  Bcast:192.168.173.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:1163193 errors:0 dropped:0 overruns:0 frame:0
          TX packets:34338 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:66834569 (63.7 MiB)  TX bytes:3935432 (3.7 MiB)
          Interrupt:9
```

Adm0 - Here are details about the **real** Ethernet interface, including MAC (physical address), Internet address (logical address), Broadcast, subnet mask, MTU value, metric, statistics (packets, errors, collisions, mega bytes transferred) for the reception (RX) and respectively transmission (RX).

Adm0.5

```
adm0.5    Link encap:Ethernet  HWaddr 00:50:C2:92:CC:4A
          inet addr:172.168.1.2  Bcast:172.168.255.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

This is the **VLAN** interface (see explanations further on), where the ID of the VLAN has been set to 5 and the Internet address to 172.168.1.2. VLANs are indicated by a digital point, such as “0.5” in this case.

Adm0:0 … 0:2

```
adm0:0    Link encap:Ethernet  HWaddr 00:50:C2:92:CC:4A
          inet addr:10.10.10.12  Bcast:10.255.255.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          Interrupt:9

adm0:1    Link encap:Ethernet  HWaddr 00:50:C2:92:CC:4A
          inet addr:192.168.173.15  Bcast:192.168.173.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          Interrupt:9

adm0:2    Link encap:Ethernet  HWaddr 00:50:C2:92:CC:4A
          inet addr:192.168.173.16  Bcast:192.168.173.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          Interrupt:9
```

The interfaces marked with a “**:**” in their names are the Aliases (see explanations further on) that you have defined for the MobiLink IP equipment. Here, one in the network class of 10.10.10.x and two in the network class of 192.168.172.y.

Bing just aliases, they share all the same physical address, and they show no information about actual data transfers (bytes and packets sent and received).

lo

Local Loopback interface

```
lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:886 errors:0 dropped:0 overruns:0 frame:0
          TX packets:886 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:43809 (42.7 KiB)  TX bytes:43809 (42.7 KiB)
```

The same parameters are shown for the virtual, local loopback interface, at the standard address for loopback, “127.0.0.1”. Since it is a loopback interface, the number of bytes sent out will always be identical to the number of bytes received.

Routes

Shows the current routes, taking the information from the Kernel routing table for IP

Routes

```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
172.168.0.0     192.168.1.1     255.255.0.0     UG    0      0        0 adm0
192.168.0.0     0.0.0.0         255.255.0.0     U     0      0        0 adm0
0.0.0.0         192.168.1.2     0.0.0.0         UG    0      0        0 adm0
```

Or:

Routes

```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
172.168.209.34  0.0.0.0         255.255.255.254 U     0      0        0 adm0
192.168.148.0   0.0.0.0         255.255.255.0   U     0      0        0 adm0
127.168.0.0     192.168.1.8     255.255.0.0     UG    0      0        0 adm0
192.168.0.0     0.0.0.0         255.255.0.0     U     0      0        0 adm0
0.0.0.0         192.168.1.2     0.0.0.0         UG    0      0        0 adm0
```

Reload

The Static Route Display shows the current routing table of the MobiLinkIP

Note that this is the Status page for network - the existing static routes for the MobiLinkIP (default routes, gateway, masquerading if used, flags, metric, interface used, etc) can be seen and changes cannot be performed.
If needing to change the routes, go to the section ‘Routes’ of this page, for defining and modifying routes.

The routes are shown from the top downwards from the most specific to the least specific.

Routes

```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
89.234.0.0      192.168.144.253 255.255.255.0   UG    0      0        0 adm0
10.0.0.0        192.168.1.8     255.255.0.0     UG    0      0        0 adm0
192.168.0.0     0.0.0.0         255.255.0.0     U     0      0        0 adm0
0.0.0.0         192.168.1.2     0.0.0.0         UG    0      0        0 adm0
```

Destination - the destination network or host system. Declaring a default route means adding a route with 0.0.0.0 as its destination. In case of networks, the last two groups of figures contain only the digit zero.

Gateway - the access gateway the respective routing entry points to. If this field has only zeroes (0.0.0.0) or an asterisk (*), this means no gateway is used, the destination network is connected directly to the computer.

Genmask - the bit mask applied to the destination. It shows the “generality” of the route.

Flags - indicator flags that describe some characteristics of the route. Such flags are:

U - the route is active and operating, the interface to be used is up;

G - the route uses an external gateway (the network interfaces of the system supply routes to the networks which are directly connected, all other routes use external gateways. Thus, the networks which are directly connected don't have the G flag, but it is activated for all other routes).

H – it is a route towards a single host instead of a network.

D - the table entry has been generated dynamically, either by a routing protocol or by an ICMP redirect message .

M – this route was modified by a dynamic routing protocol;

R - the route was re-activated following update by dynamic routing protocol. Routes may be configured as passive or static even when a protocol for dynamic routing is used.

Metric

The 'distance' to the target (usually counted in hops). It is not used by recent kernels, but may be needed by routing daemons.

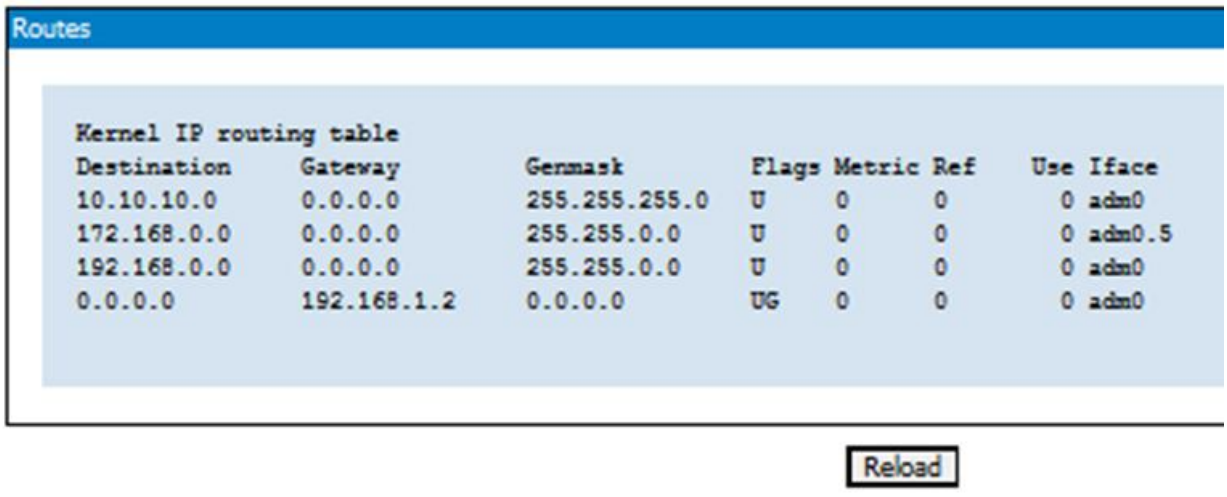
Ref

Number of references to this route. (Not used in the Linux kernel, this is why you will see the value zero)

Use

Count of lookups for the route. Depending on the use of -F and -C this will be either route cache misses (-F) or hits (-C).

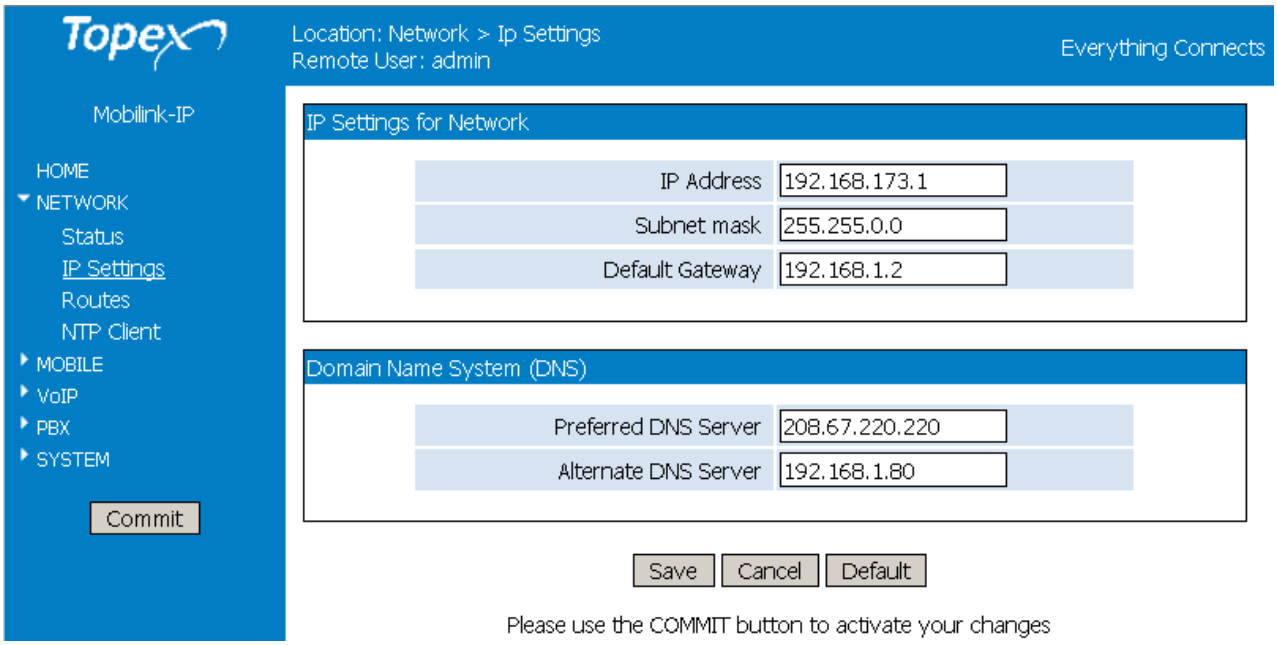
Finally, **Iface** is the name of the network interface used for this route, the interface to which packets for this route will be sent.



For the Ethernet interfaces there is currently a first name, respectively **adm0,** for the single physical interface, which has several routes defined to it, and then the **adm0.5,** for the VLAN with ID=5 that has been defined.

6.3.2 IP Settings

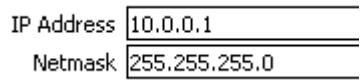
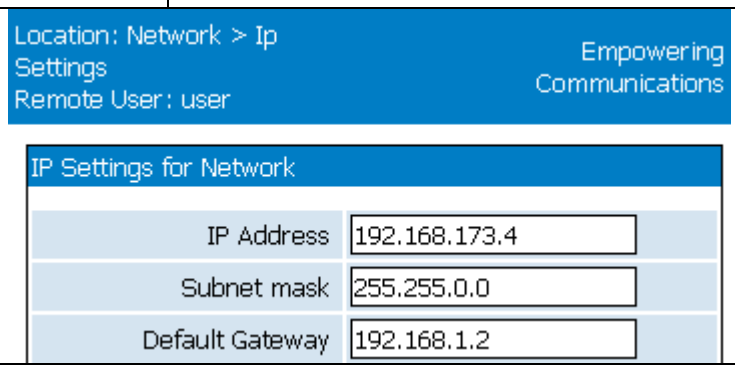
Here one can set up the parameters for the equipment in the local network.
Settings for the LAN IP of the MobiLinkIP gateway are the standard ones: IP Address and Netmask, Gateway (if used), Preferred and Alternate server for DNS.



These settings control how the Rohde & Schwarz Topex S.A. equipment connects into the local wired (Ethernet) computer network.

IP settings for network

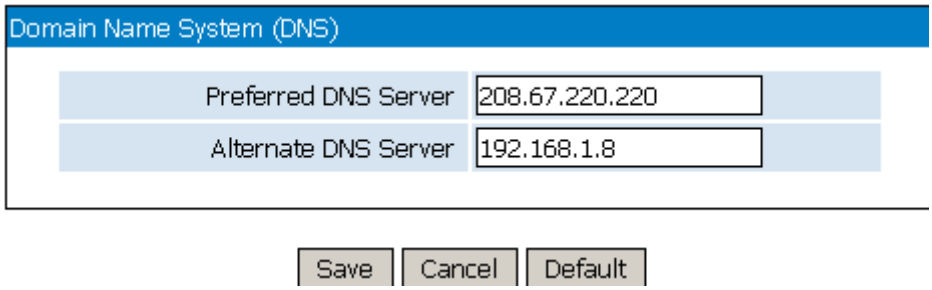
The default address value is **192.168.173.1** and the netmask is 255.255.255.0.

One may change these default settings, if the configuration of the network requires this, for instance to *10.0.0.1* in this example:	
Usually the IP address allocated for MobiLinkIP on the LAN side is a **non-routable** (internal) address, as the ones shown here, in the range 192.168.xxx.yyy:	

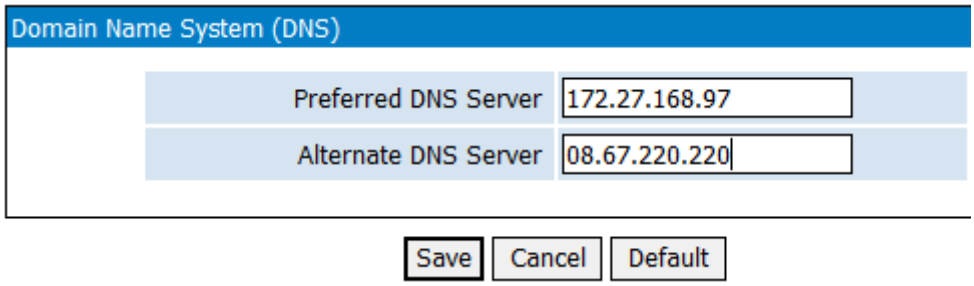
When changing this IP address, MobiLinkIP tries to redirect the web browser to the new address automatically. If it does not succeed, update the configuration page by entering the new IP address in the browser, such as https://192.168.173.4 in the above example and pressing the Reload button of the browser.

DNS Servers:

Select which primary and secondary servers for DNS (Domain Name Service) will be used. The Name Servers may be from the local network (address 192.168.x.y) as the second entry in the following example or from the public network, the great Internet, such as 208.67.220.220 in the example below:



Other name-server example:



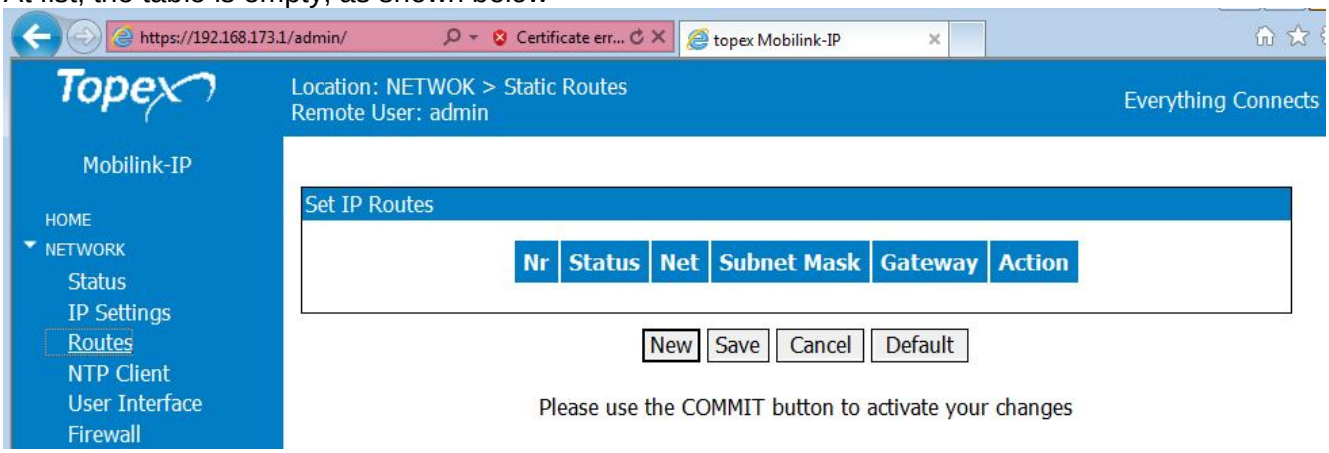
Saving

Save Cancel Default	Use the "Save" button to save the settings, then "Commit" (down on the column to the left of the screen) to make permanent the IP settings.

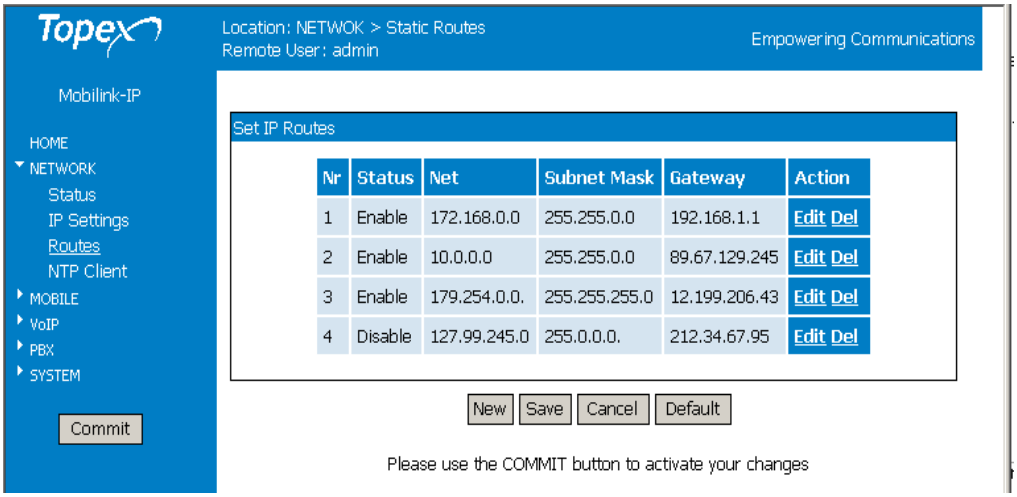
6.3.3 Static Routes

Routing means determining and prescribing the path or method used for forwarding data packets. This option page is concerned with defining fixed (static) routes. It shows the current routing table for MobiLinkIP and allows defining several static routes. The routes established here will be shown in the page Network ->Status-> Routes.

At fist, the table is empty, as shown below

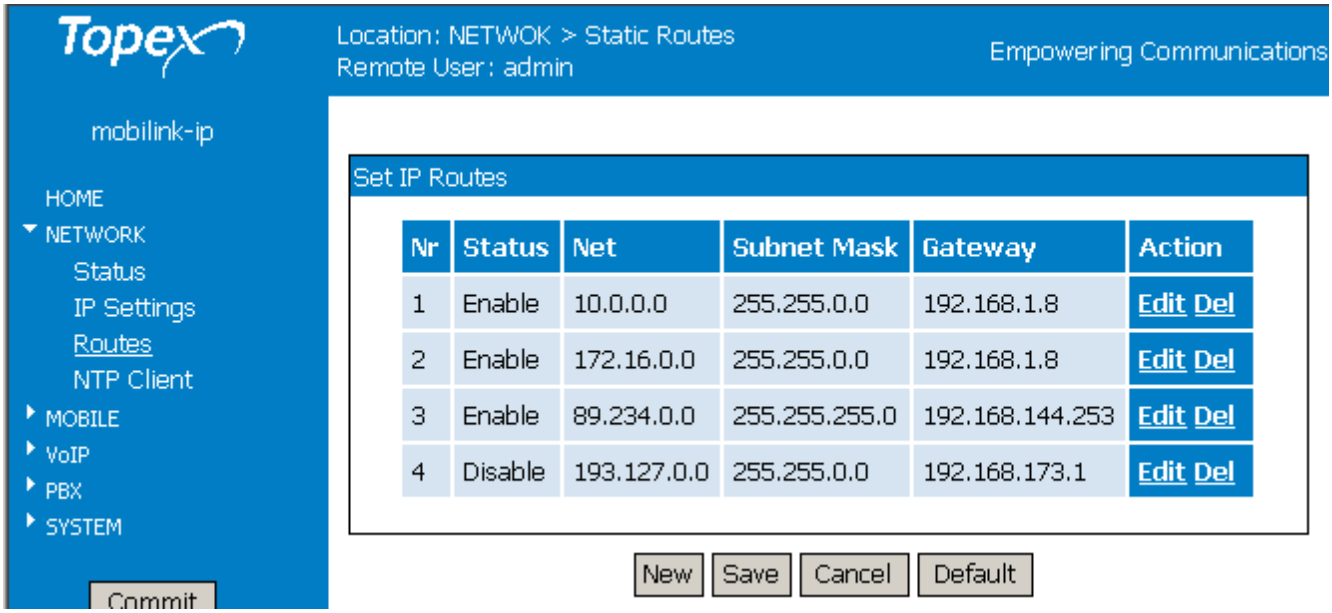


"Set IP Routes" lets one edit, remove or add routes in the table shown below:



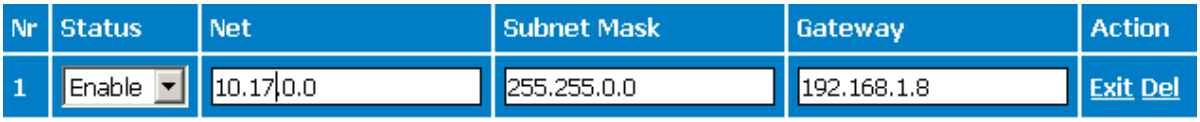
Static Route Definition

Such a static route is a possible path from a device to its destination or to another host. One **must** insert predefined rules of routing for the MobiLinkIP in case of appending one or several network devices such as routers behind the MobiLinkIP device, to share the same connection to the mobile Internet. This way the MobiLinkIP gateway will be able to know where it may deliver the data packets coming from the Internet with different destination IP addresses.



Buttons

Use **New** to create a new row (route definition), **Edit** to edit an existing definition, **Exit** get out of the table, and **Save** to save the changes. **Del** erases from the table an existing route.



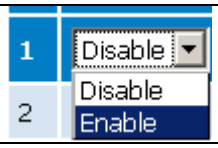
Defining a route

Net: Address of the remote network or host to which you want to assign a static route. Notice that it is not an IP address, like the one for the Rohde & Schwarz Topex S.A. MobiLink device, but the address of a network, so that the last two groups of figures will always be zero.

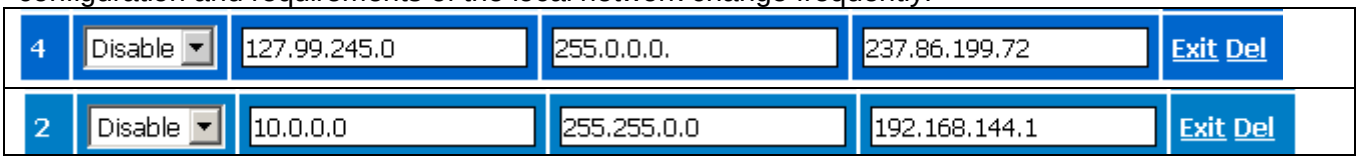
Netmask: the subnet mask determines which portion of the destination IP address is the network part and which is the host part.

Gateway: the gateway to be used, enter here the IP address of the router which allows for contact between MobiLinkIP and the remote host or network.

Enable:

Each of the routes defined or edited can be individually enabled or disabled. By default, this field is set to Disabled, meaning that the routes are saved, but they are not active.	

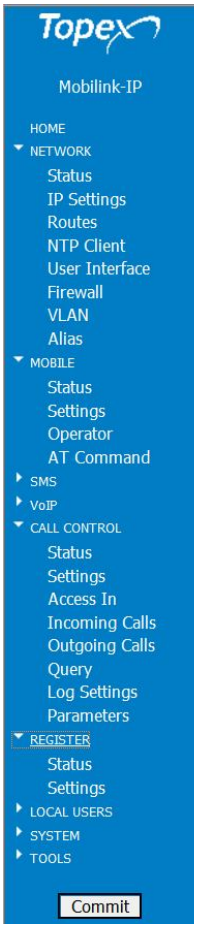
This is especially useful when configuring several MobiLinkIP devices one after another, or when the configuration and requirements of the local network change frequently.



In this case you can pre-define several routes, even if they are not currently in use, and leave enabled only the ones strictly necessary for the current configuration.
The other routes are available, they may be edited and enabled as the need arises.

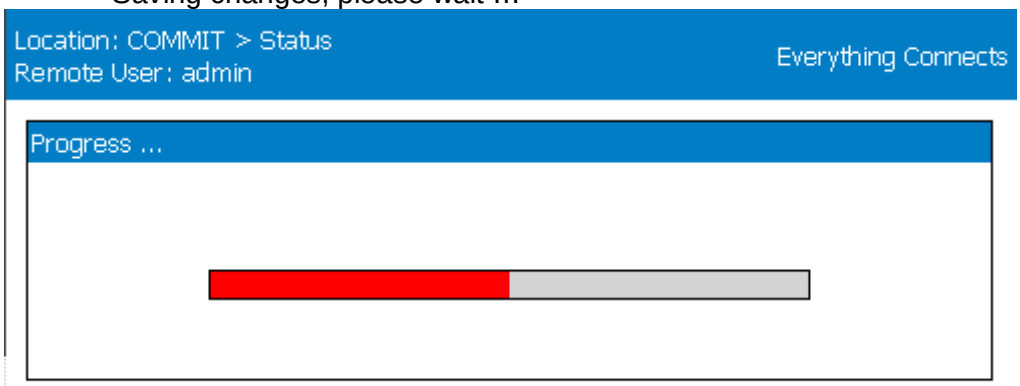
6.3.4 Commit

The “Commit” option described here is not specific to the Network, but it is rather a general option for Rohde & Schwarz Topex S.A. devices.



If configuration changes were performed, using the “Save” button is not enough since it saves the modifications only into the temporary memory of the MobiLinkIP.
Always press the “Commit” button if these changes need to be permanent.
This button is located at the bottom of the Menu list, to the left side of the screen.
There is a “Commit Settings” message and, underneath it, a red progress bar over black or grey background which says:

“Saving changes, please wait …”

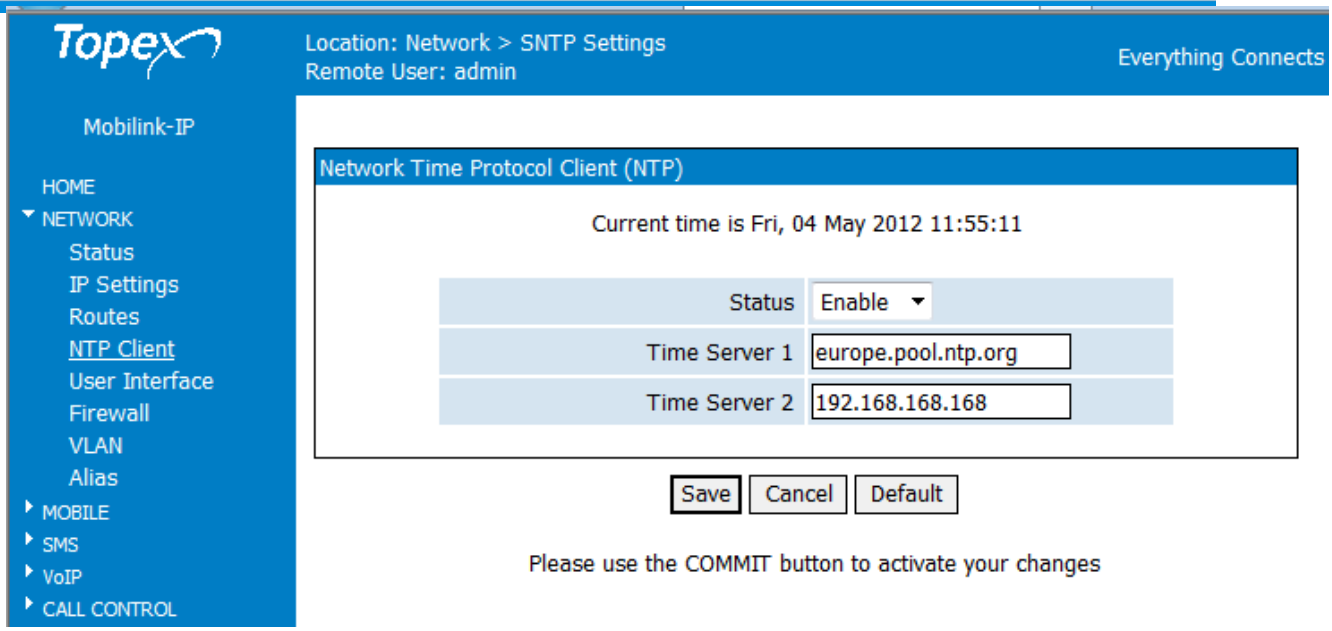


Saving will take some time, because the changed settings are saved into permanent (Flash) memory of the equipment.
The MobiLinkIP resets, and when it starts again, the new set of parameters will be active.

Warning: While committing changes, when resetting the MobiLink IP or while loading a new program image, the equipment will cease operation for a few seconds. This means all connections: voice, local network etc. will be interrupted, but will resume when the MobiLink IP starts again.

6.3.5 SNTP Client

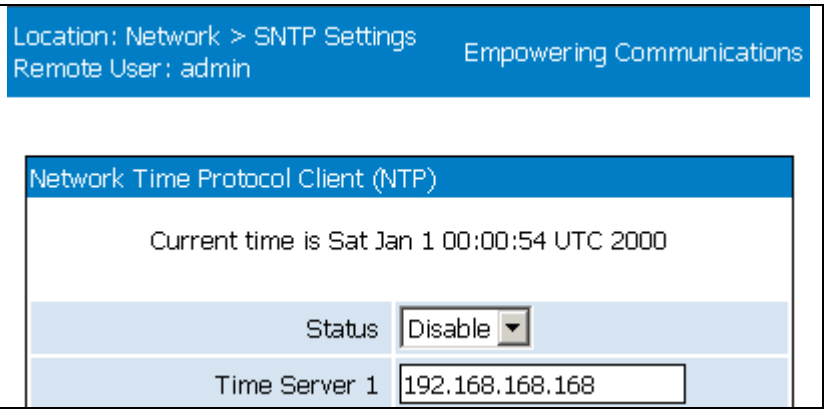
Enables and configures the NTP Client application of MobiLinkIP.

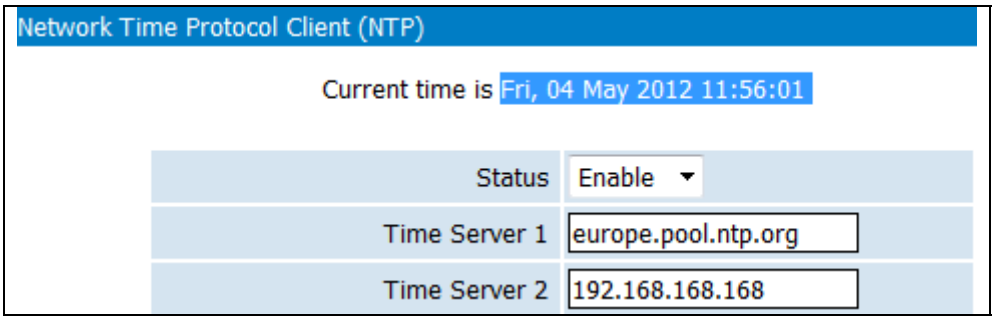


The **Simple N**etwork **T**ime **P**rotocol is used to update the real-time clock in a computer, over Internet.
It uses one or several remote dedicated Time servers on the Internet that accurately synchronizes the system date and time.

Status of NTP Service: Enabled or Disabled; by default it is disabled

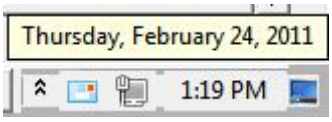
Server: enter the full name of the NTP server in need to use, such as “utcnist.colorado.edu” or “ro.pool.ntp.org”.
The “Current time” indicator shows the current UTC time (Universal Coordinated Time) of the system, with millisecond precision.
Notice there are two fields, for Time Server 1 and 2. You may use severs from different classes, for instance one in the local network, such as 192.168.168.168 in the examples below, and the other on the public Internet, like utcnist.colorado.edu .

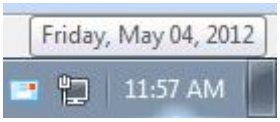
If the NTP feature of MobiLink IP is **not active** (it is disabled, the selected server is not online, or there is no connection to the Internet) it will display the default UTC date/time, which is begins at date Jan 1, 2000 and time 0:00:00.	



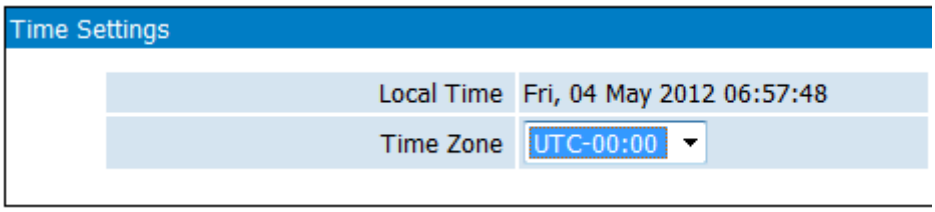
When the NTP Client becomes active, it shows the current UTC time :

This Coordinated Universal Time will be then kept by the real time clock of the machine, if your MobiLink IP is fitted with RTC.
Please note that the UTC time may be different from the local time of your computer!





*To adjust this difference, go to the configuration page **SYSTEM>Time**.*



And set the "Time Zone" accordingly!

When the NTP feature is enabled, one can see in the system logs the moment when the application running on MobiLinkIP connects to the Internet and synchronizes the time. At that moment, the date and time jumps from the default one beginning at "Jan 1 2000" to the actual date/time supplied by the NTP server selected by the user:

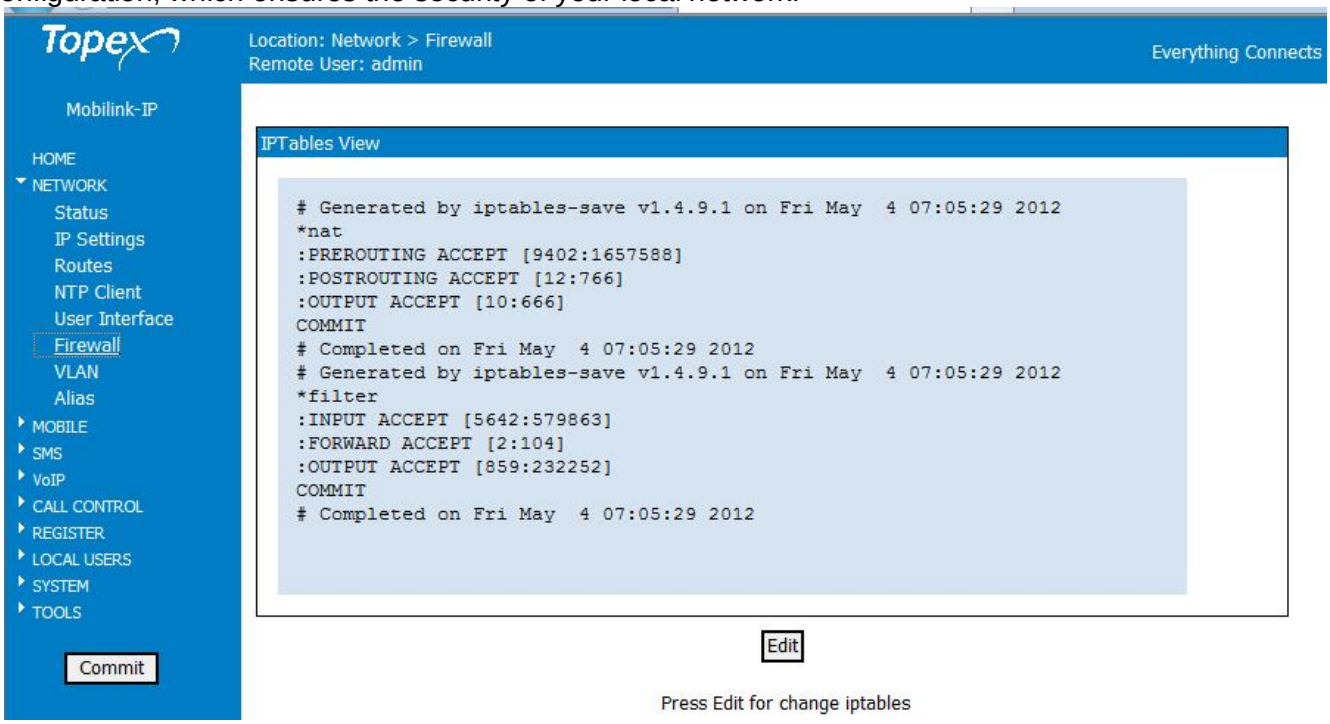
```
Jan  1 00:00:08 (none) kern.warn kernel: udp redirect init
Jan  1 00:00:08 (none) kern.warn kernel: udp_redirect proc initialization okay!
Jan  1 00:00:08 (none) kern.warn mini_httpd[101]: started as root without requesting
chroot(), warning only
Jan  1 00:00:08 (none) kern.notice mini_httpd[101]: httpd starting on bytton, port 443
Jan  1 00:00:08 (none) kern.warn kernel: IFX TAPI v3 - The Common Voice API, version
3.5.1.4
Jan  1 00:00:08 (none) kern.warn kernel: ^M(c) Copyright 2006, Infineon Technologies AG
Jan  1 00:00:08 (none) kern.warn kernel: IFX VINETIC device driver, version 1.2.6.4
Jan  1 00:00:08 (none) kern.warn kernel: ^M(c) Copyright 2006, Infineon Technologies AG
Jul 10 13:18:14 (none) user.notice root: Receive Time form 192.168.168.168
Jul 10 13:18:15 (none) kern.warn kernel: reg_buffer_pool_get is called
Jul 10 13:18:15 (none) kern.info kernel: reg callback bufferpool get, handle 811FA840
```

Or:

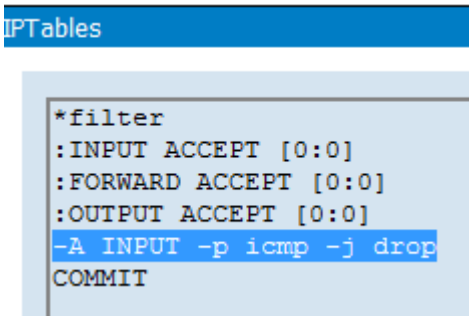
```
Jan  1 03:00:23 bytmspd: chipvin.c:  - EDSP vers: 0x  11
Jan  1 03:00:23 bytmspd: chipvin.c:  - EDSP  Int: 0x  40
Jan  1 03:00:23 bytmspd: comcen.c: Init server at Port 9677
Jan  1 03:00:23 bytmspd: comcen.c: Server accept is OK !
May  4 08:22:33 root: Receive Time form europe.pool.ntp.org
May  4 11:23:08 crond[1082]: time disparity of 6490582 minutes detected
May  4 11:28:43 /mnt/app/bin/cenq: Command: view portsoncard 0
May  4 11:28:43 /mnt/app/bin/cenq: Command: view calls
```

6.3.6 Firewall

MobiLink IP is protected by an advanced SPI firewall. The equipment comes with a default firewall configuration, which ensures the security of your local network.



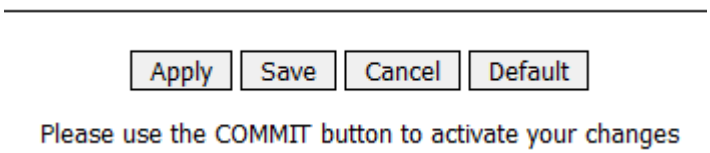
The “Firewall” section includes a window for viewing and changing the IP tables settings:
Here you can see the current state of data packets received and accepted. Press the button **Edit** located at the bottom to go to the table with rules to perform changes:



Enter the new rules that you want to add, for instance :

-A INPUT -m state --state ESTABLISHED -j ACCEPT
-A INPUT -p tcp -m tcp --dport 631 -j ACCEPT
-A INPUT -p all -s 127.0.0.1 -d 127.0.0.1 -j ACCEPT
-A INPUT -j DROP
-A OUTPUT -o lo -j ACCEPT
-A OUTPUT -p tcp -m tcp --sport 631 -j ACCEPT

When you are finished, use the buttons at the bottom:



Apply immediately applies the new rules, but they are not yet saved. „**Save**" saves them, but only in the temporary memory. The rules do not become persistent, unless you press the „Commit" button.

*This is very useful when testing new rules: you edit them and press **Apply**, than watch for the effect. If you do not like how the firewall performs, you just reboot the MobiLink IP equipment, and the recent changes will be lost, so you can start again editing the IP tables!*

Definition

IP Tables is a user space application program that allows a system administrator to configure the tables provided by the firewall of the Linux kernel (implemented as different Netfilter modules) and the chains and rules it stores. Different kernel modules and programs are currently used for different protocols, the iptables apply only to IPv4.
A firewall using iptables this way is said to be a **stateful** firewall versus the older, stateless firewall, which was not fully aware of the context from which a data. Therefore, the iptables firewall can make better decisions on the fate of packets and connections.,
There are five predefined chains, though a table may not have all chains. Predefined chains have a policy, for example ACCEPT, which is applied to the packet if it reaches the end of the chain. The system administrator can create as many other chains as desired. These chains have no policy; if a packet reaches the end of the chain it is returned to the chain which called it. A chain may be empty.

PREROUTING: before effective routing, packets will enter this chain, as soon as they are received by an interface, before a routing decision is made.

POSTROUTING: after the local routing is performed, but before *leaving* an interface

INPUT: Right before they are sent a local process, the rules apply to external packets that are sent to the equipment.

OUTPUT: Right after they are generated by a local process, rules apply to packets that get out of the MobiLink IP equipment.

FORWARD: transfer operations, the data packets are coming in through one interface and getting out via another interface. All packets that have been routed and were not for local delivery will traverse this chain.

After you perform changes, you will see the completion time / date for the changed rules:

```
:POSTROUTING ACCEPT [197:10382]
:OUTPUT ACCEPT [197:10382]
COMMIT
# Completed on Thu Apr 28 14:13:34 2011
# Generated by iptables-save v1.4.9.1 on Thu Apr 28 14:13:34 2011
*filter
:INPUT ACCEPT [1113:101108]
```

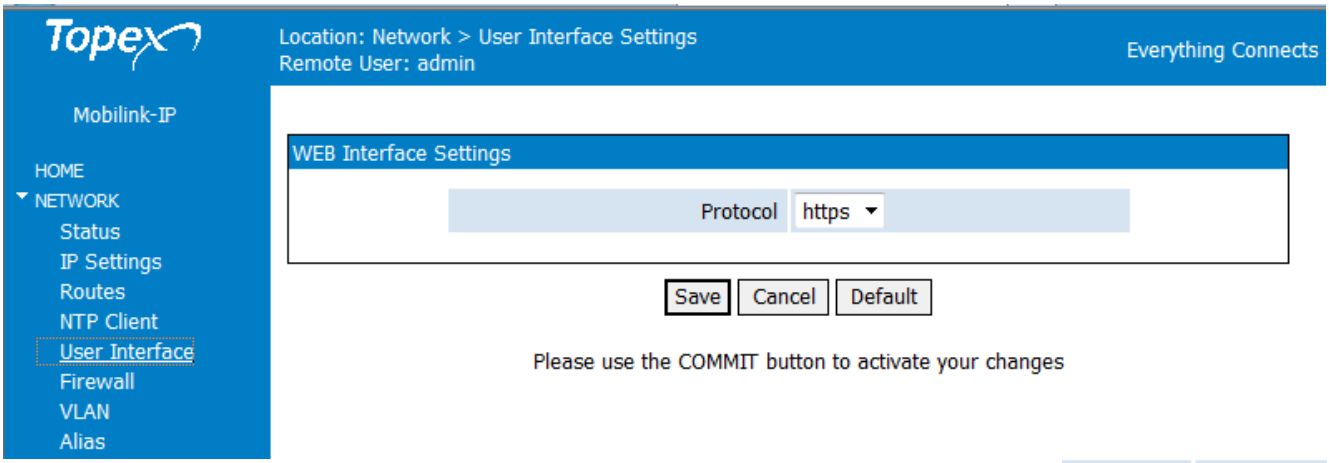
Or:

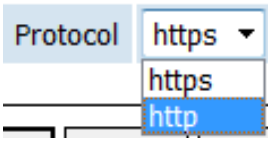
```
# Generated by iptables-save v1.4.9.1 on Fri May  4 07:06:57 2012
*nat
:PREROUTING ACCEPT [9620:1693334]
:POSTROUTING ACCEPT [12:766]
:OUTPUT ACCEPT [10:666]
COMMIT
# Completed on Fri May  4 07:06:57 2012
# Generated by iptables-save v1.4.9.1 on Fri May  4 07:06:57 2012
*filter
:INPUT ACCEPT [8:1089]
```

Don't forget to click the Save button and then "Commit" to make the changes you performed permanent.

6.3.7 User Interface

The “Web Interface Settings” refers to the type of connection to the configuration Web pages of MobiLink IP:

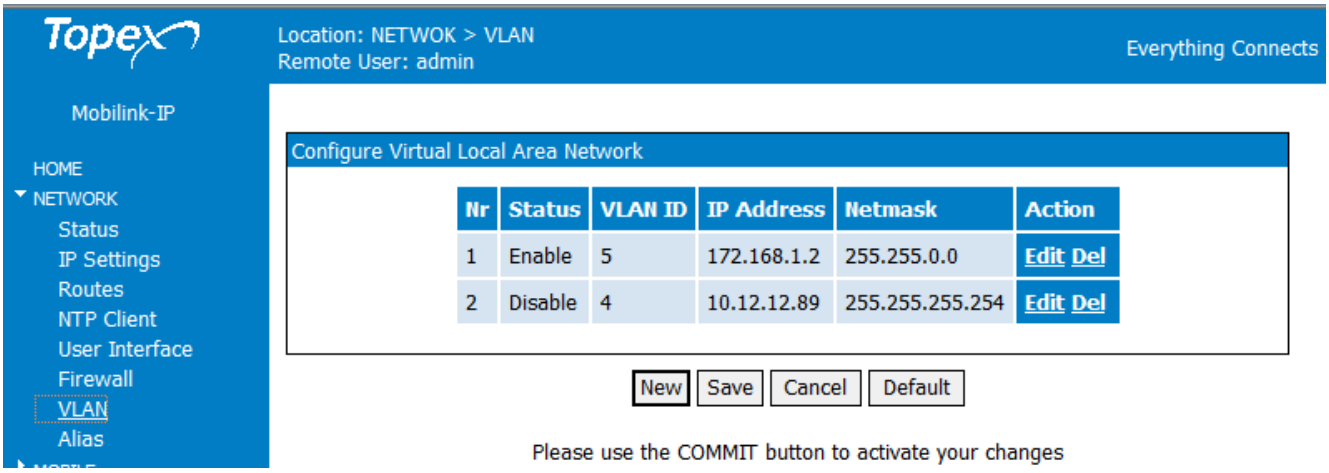




You can select the protocol to be used, the secure HTTPS (default) or the standard HTTP (unsecured). The equipments generally use **https**, but it may be possible that a particular application requires a *http* connection.
When you change the type of protocol to be used for the Web interface of MobiLink IP, you must use Commit, then enter in the browser the new kind of address, such as **http://192.168.173.1**.

6.3.8 VLAN

This page configure the settings for the Virtual LANs (VLAN) of MobiLink IP:



A virtual or logical LAN is a subgroup in the physical local area network, which is created by software. It functions at Layer 2, unlike IP sub-networks which operate at Layer 3 level.

MobiLinkIP implements VLANs according to the IEEE standard 802.1q. This specifies additional bits (flags) to the data packets, marking them for prioritization and/or routing for VLAN.

The “Configure Virtual LAN” table lets you define several logical networks – for each one you must set up the ID, IP address and corresponding net mask.

Nr	Status	VLAN ID	IP Address	Netmask	Action
1	Enable	5	172.168.1.2	255.255.0.0	Edit Del
2	Disable	4	10.10.10.19	255.255.255.252	Exit Del

New Save Cancel Default

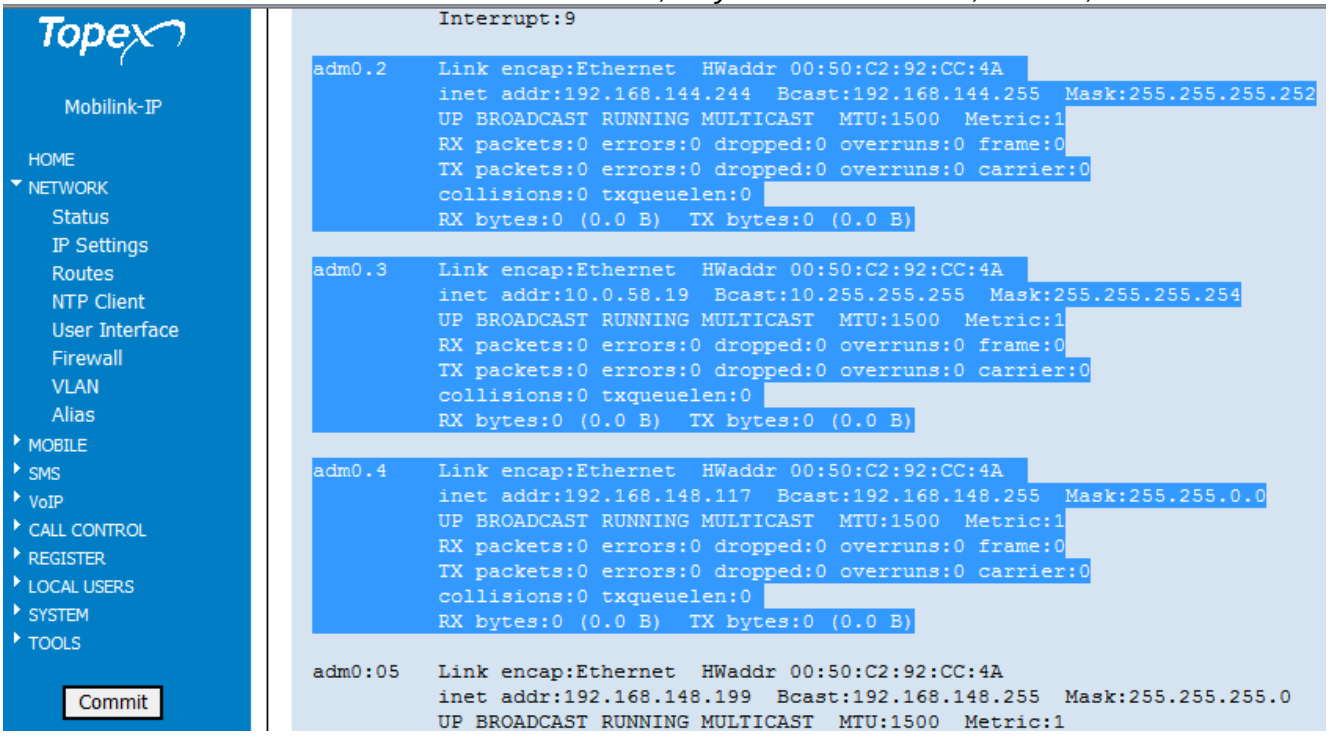
Each VLAN definition may be individually enabled or disabled. Also, the definition may be saved or individually deleted.

Configure Virtual Local Area Network

Nr	Status	VLAN ID	IP Address	Netmask	Action
1	Enable	4	192.168.148.117	255.255.0.0	Edit Del
2	Enable	3	10.0.58.19	255.255.255.254	Edit Del
3	Enable	2	192.168.144.244	255.255.255.252	Edit Del

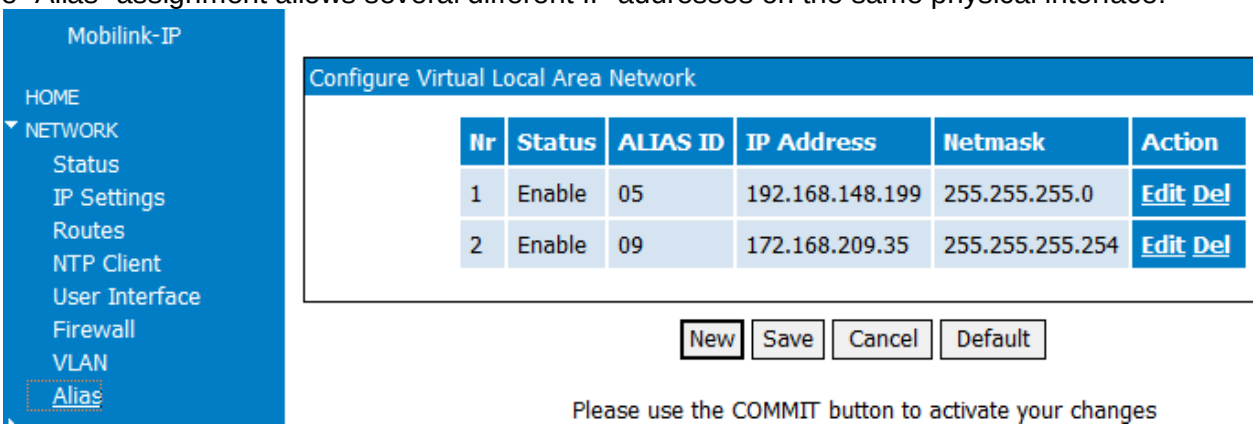
New Save Cancel Default

These VLANs can bee seen in NETWORK>Status, they are called adm0.2, adm0.3, and so on:

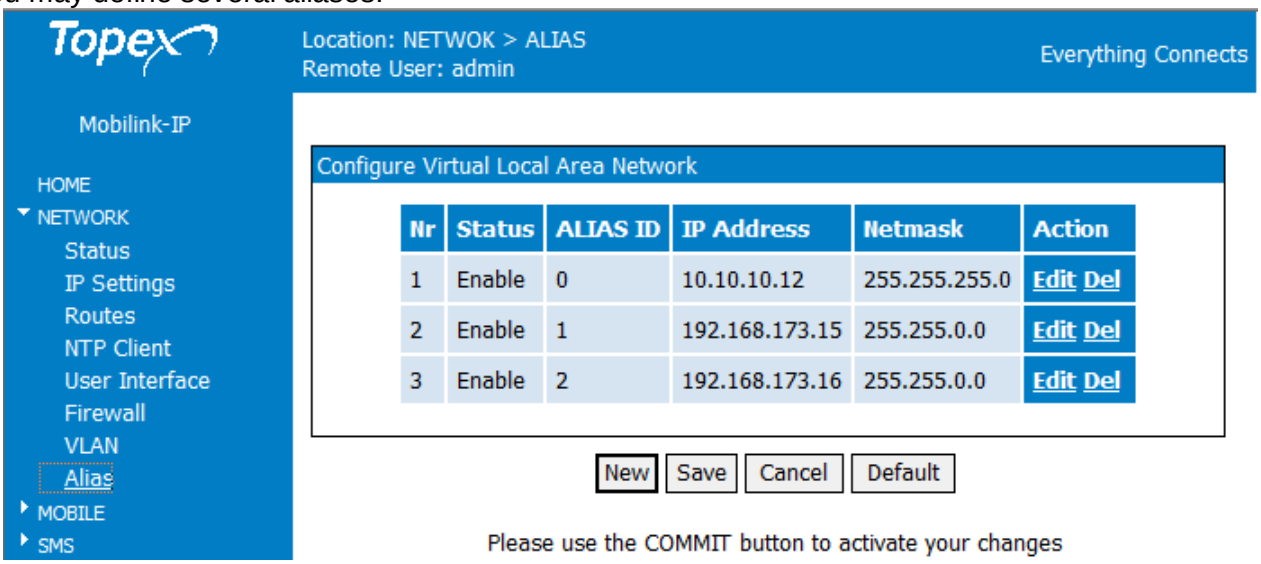


6.3.9 ALIAS

The “Alias” assignment allows several different IP addresses on the same physical interface:



You may define several aliases:



The “Aliases” table lets you define and configure additional several IP addresses that will be available for the MobiLink IP equipment.
You can create new entries into the table, enable, edit, save or delete them.
These Aliases can be seen in the NETWORK> Status Web page of MobiLink IP:

```
adm0:0    Link encap:Ethernet  HWaddr 00:50:C2:92:CC:4A
          inet addr:10.10.10.12  Bcast:10.255.255.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          Interrupt:9

adm0:1    Link encap:Ethernet  HWaddr 00:50:C2:92:CC:4A
          inet addr:192.168.173.15  Bcast:192.168.173.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          Interrupt:9

adm0:2    Link encap:Ethernet  HWaddr 00:50:C2:92:CC:4A
          inet addr:192.168.173.16  Bcast:192.168.173.255  Mask:255.255.0.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          Interrupt:9
```

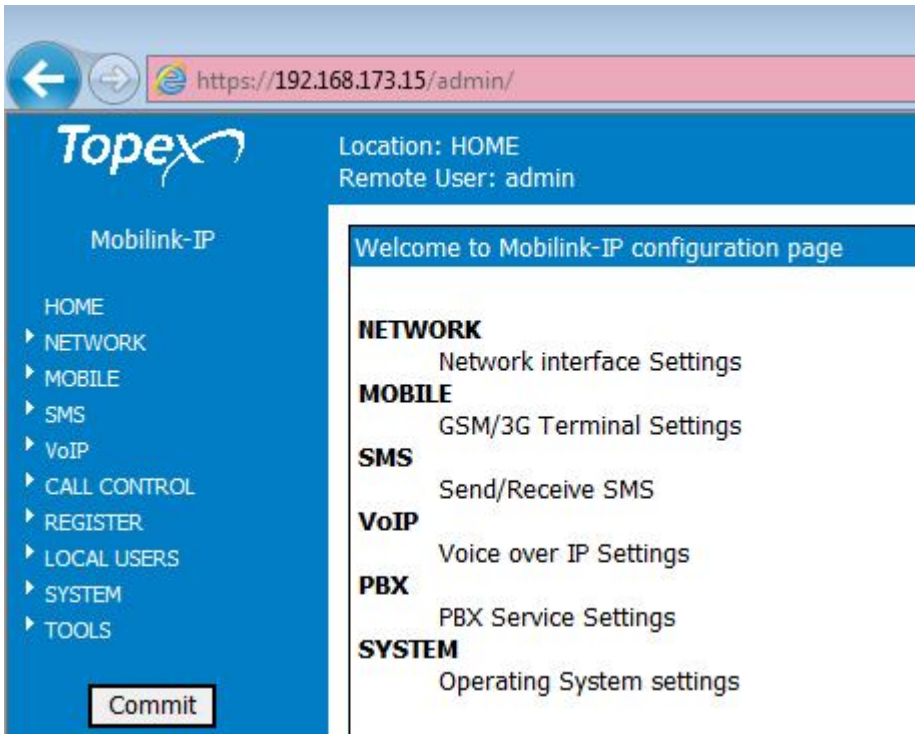
Notice that while VLANs have names such as adm0.4 or adm0.5, and show information about packets sent or received, the Aliases have names such as adm0:0, adm0:0.
Also, being just logical interfaces, they all share the same hardware address and they show no information about packets received or transmitted!

The corresponding required routes for the Aliases you defined are automatically added to the routing table of the MobiLink IP equipment:

Routes

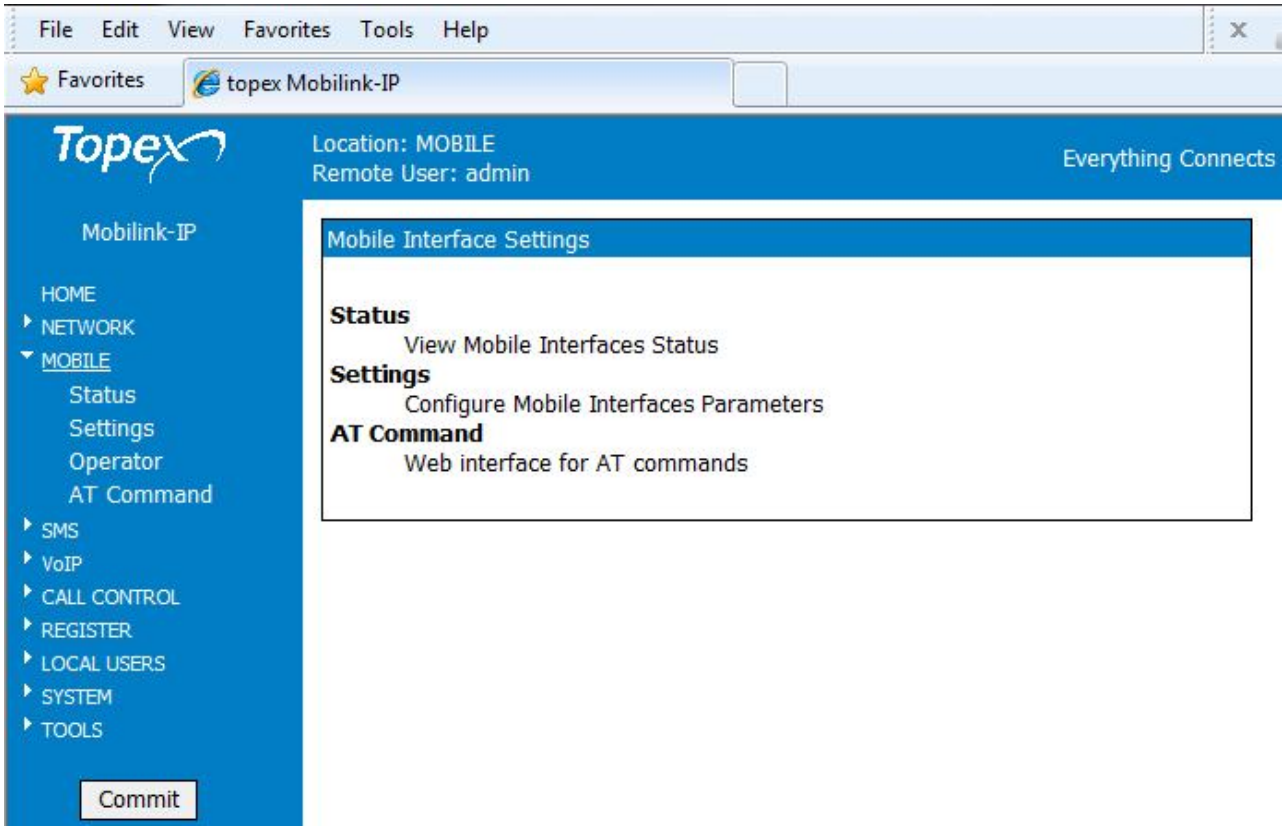
```
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
10.10.10.16     0.0.0.0         255.255.255.252 U     0      0        0 adm0.4
10.10.10.0      0.0.0.0         255.255.255.0   U     0      0        0 adm0
172.168.0.0     0.0.0.0         255.255.0.0     U     0      0        0 adm0.5
172.168.0.0     0.0.0.0         255.255.0.0     U     0      0        0 adm0
192.168.0.0     0.0.0.0         255.255.0.0     U     0      0        0 adm0
0.0.0.0         192.168.1.2     0.0.0.0         UG    0      0        0 adm0
```

After issuing a Commit, the MobiLink IP box restarts and will be now accessible at all the addresses you have defined as Aliases, as 192.168.173.15 in the example below!



6.4 Mobile

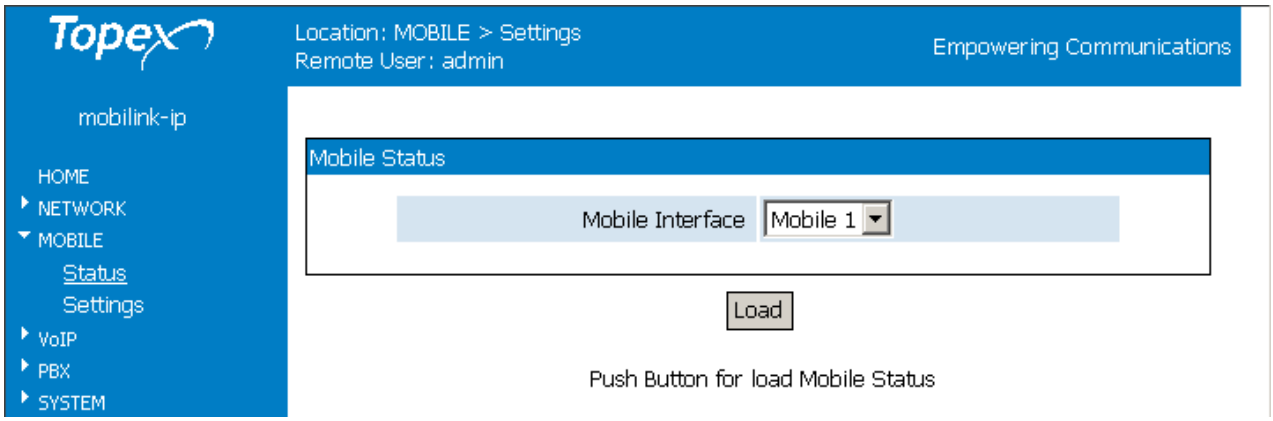
The “Mobile” section is for viewing and configuring the two mobile interfaces of the equipment.



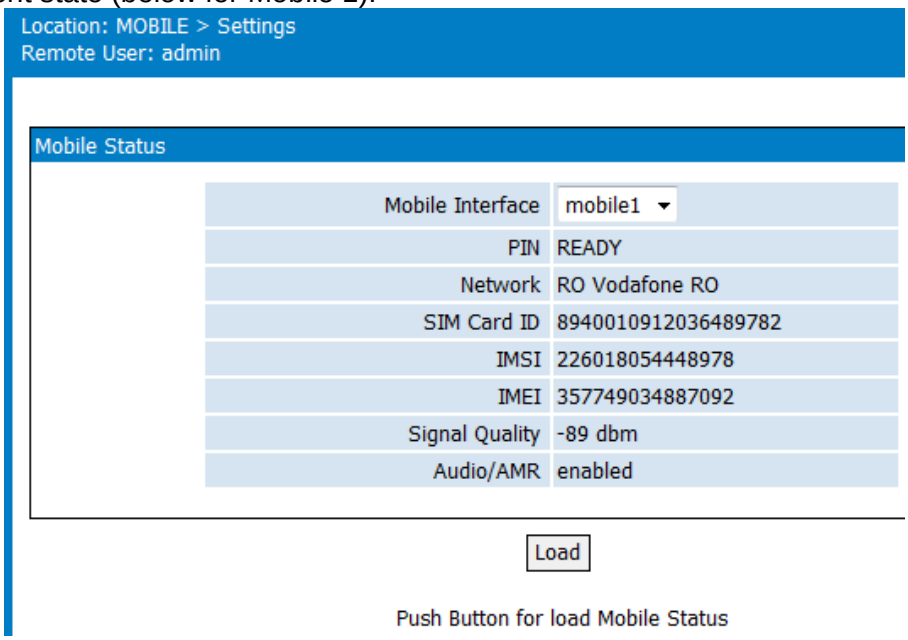
It has four sub-sections, one for displaying the current state, another for configuring the mobile modules, the third for locking the module to a certain mobile operator and the last one for sending AT commands directly to the mobile modules:

6.4.1 Status

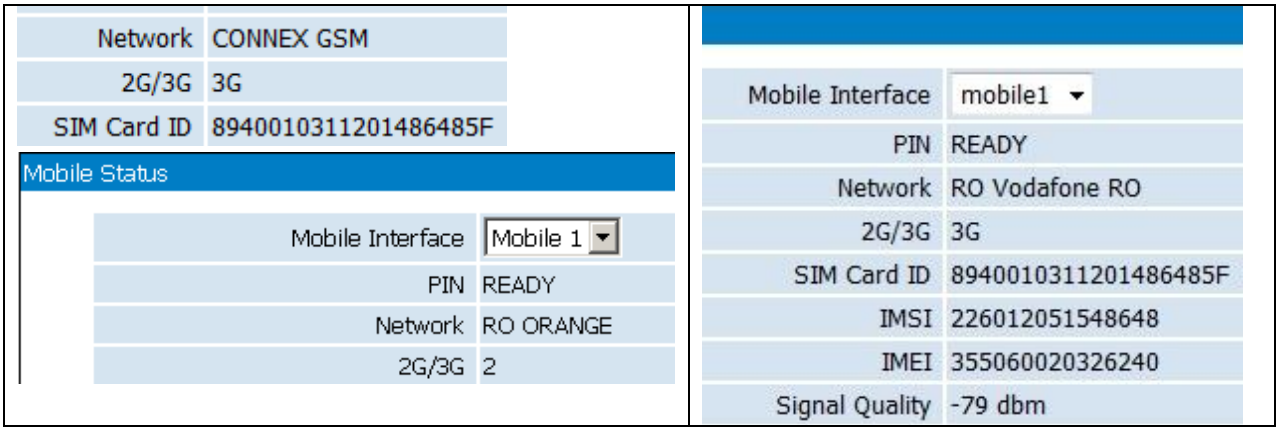
Displays the state of the selected mobile interface:



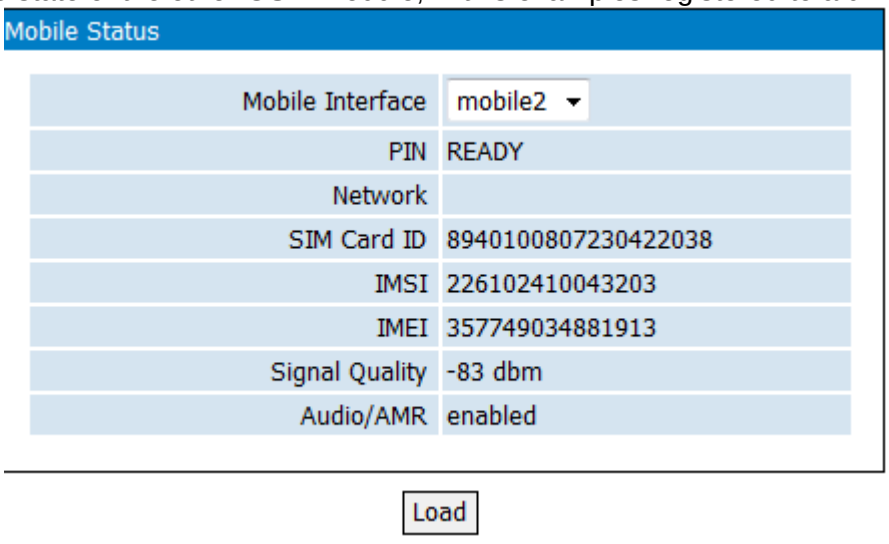
First, select the Mobile interface whose state will be shown – select 1 or 2 , then press “Load” to see the current state (below for Mobile 1):



In case of equipments fitted with 3G modules, an additional field show up, indicating the technology of the mobile network, 2G for GSM or 3G for UMTS/HSPA:



Likewise, should “Mobile2” be selected instead of the first module, the MobiLink IP equipment will show the state of the other GSM module, in this examples registered to a different carrier:



Still another example, for the Romanian 3G carrier Digi.Mobil:

Mobile Interface	mobile2
PIN	READY
Network	RO Digi.Mobil
2G/3G	3G
SIM Card ID	89400508101001290 71F
IMSI	226050001213062
IMEI	355060020326224
Signal Quality	-95 dbm

PIN – state of the PIN code. **Ready** or **OK** is the normal state, which means the SIM is active (unlocked) and the equipment may be used. It happens when the PIN is not requested, or that it is asked for, the correct value has been entered, so the SIM card may operate. If it shows ERROR, it means the respective SIM is blocked because of a missing or incorrect PIN code. *You must disable PIN request for the subscriber card!*

Network – when the respective SIM is properly registered, this field shows the name of the mobile network where the equipment is registered, as transmitted by the mobile carrier and understood by the mobile. Thus, it can be either the commercial name of the carrier, such as "RO Orange", "RO Vodafone RO", "COSMOROM", "RO Digi.Mobil " and so on, or a code like <<0,2, "22601",2>>. When the SIM is missing or not properly registered, this field may display "**Limited service**".

2G/3G – only for equipments fitted with 3G modules, it shows the type of network: either 2G or 3G (second or third generation). This is the technology (GSM/GPRS or UMTS/HSDPA) of the mobile network where the module is actually connected, provided that the network allows this information. MobiLink IP devices fitted with 2G (GSM) modules do not show this field;

SIM card ID – or Integrated Circuit Card ID**,** unique 20-digit number assigned to a SIM card by the manufacturer of the card. Using a formula, the ICCID can be converted into the subscriber's IMSI (International Mobile Subscriber Identity) number in a GSM cellphone.

SIM Card ID	8940010311201486485F

IMSI - International Mobile Subscriber Identity) code, that is specific to the subscriber, therefore to the SIM card used in the Rohde & Schwarz Topex S.A. equipment.
See below a few IMSI codes, from different SIM cards used in the modules of MobiLinkIP:

IMSI	226012051548648

22601965134273

IMSI Code	22610241004320

22601853012194

IMSI Code	22610100373296

22610574108729

When the Mobile module of MobiLink detects an active SIM card, it will query (and display) the IMSI code. Since the IMSI code is related to the SIM, when changing the SIM card used with the respective GSM module, the user will have another IMSI code.

IMEI - the International Mobile Equipment Identifier is a 15-digit number that uniquely identifies an individual mobile terminal wireless device.
While IMSI is specific to the subscriber (SIM card), IMEI is specific to the equipment (cellular modem of MobiLinkIP)

Signal Quality - The level of the signal received from the mobile network.

Mobile Interface	mobile2
PIN	READY
Network	22610
SIM Card ID	226102410043203
IMEI	352024024751764
Signal Quality	-101 dbm

This level may display as a relative or absolute value. Older firmware versions did show only the relative level, on a scale from 0 (minimum) up to 99 (the maximum).

The newer firmware versions show the level directly in dBm, as shown in this example.

Signal level is shown with a minus sign, this means that a smaller figure corresponds to a higher signal level.

For instance, -91 dBm corresponds to a better signal quality than -101 dBm, and -85 dBm is even better!!!

Mobile Interface	mobile1
PIN	READY
Network	
SIM Card ID	226108011074609
IMEI	352024024759098
Signal Quality	-85 dbm

Signal Quality	-83 dbm
Audio/AMR	enabled

The last field is **Audio/AMR**, indicating the state of the AMR codec used for voice.

This field shows up only in case of mobile modules that support this feature.

By default, the usage of AMR codec is enabled.

Many 3G modules do not support AMR.

Signal Quality	-91 dbm

In this case, the filed Audio/AMR will be missing!

Load

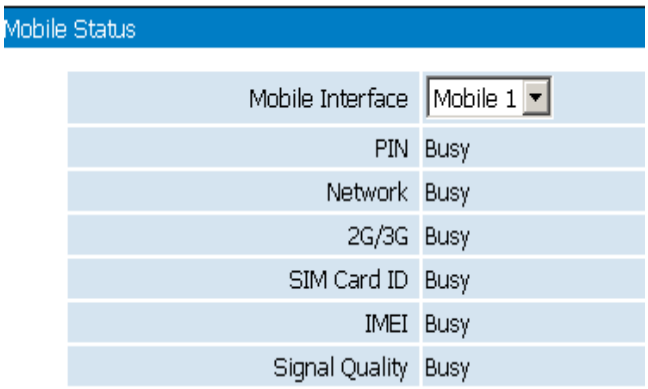
Load

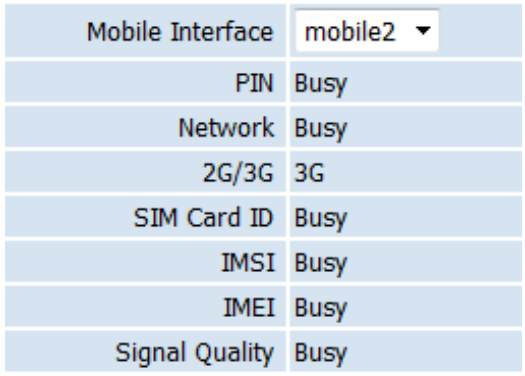
Push Button for load Mobile Status

At the bottom of the Mobile Status screen there is a “Load” button - click it again to refresh the display of module’s status. This way one is sure to see the current state of the mobile module and subscriber information!

Notes:

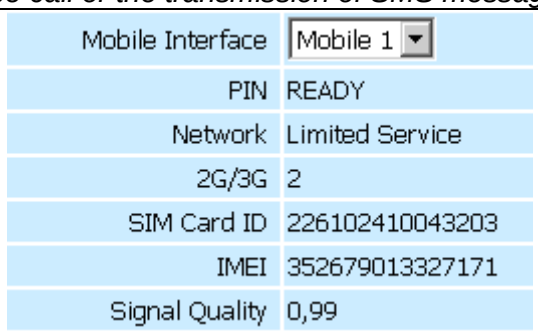
To be able to display the current state, the respective mobile module must **NOT** be in a call! When the GSM module is routing a VoIP call, or transmitting an SMS message, it will no longer be available for status **interrogation**, so it will display "Busy":





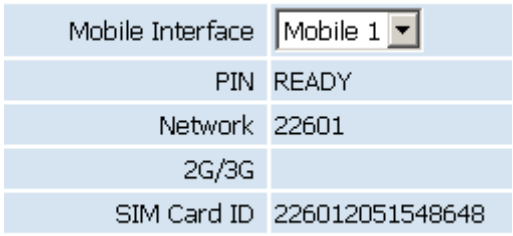
*This does not mean something is wrong, simply that the module is unavailable for status **interrogation**.*
Try again (click "Load") later, when finished with the voice call or the transmission of SMS messages.

1. Likewise, the value "zero" for the signal quality does not mean <<no signal at all>>, it is simply the lowest value indicated by the equipment.
   In this case one may have a "Limited service" warning - the SIM is still registered to the network, but cannot be used for ordinary voice calls, it is only good for the emergency services!



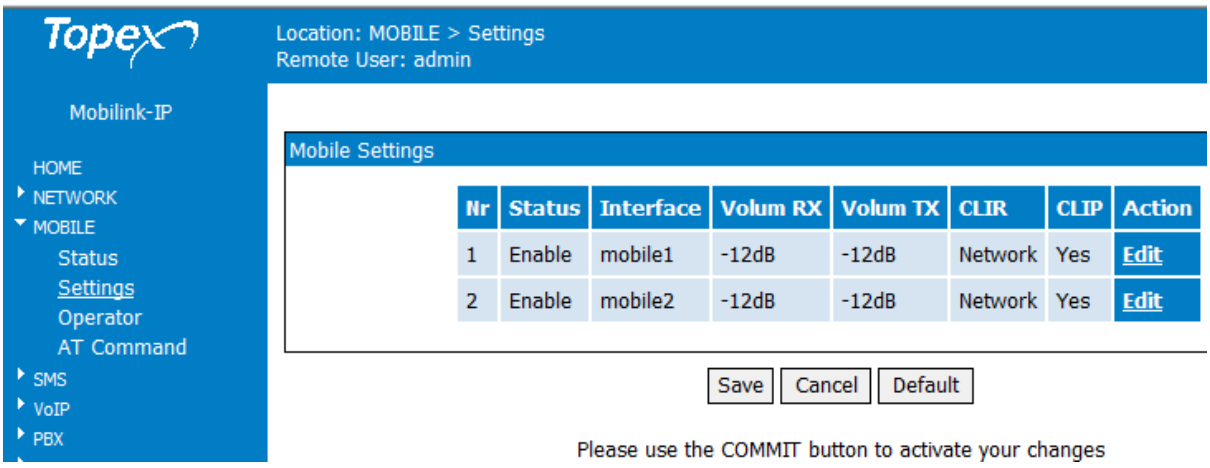
3. The "Mobile" information available depends upon the actual type of the cellular module used in MobiLinkIP and upon the service provider.

   Thus it is possible that you get less detailed information, as in the following example:

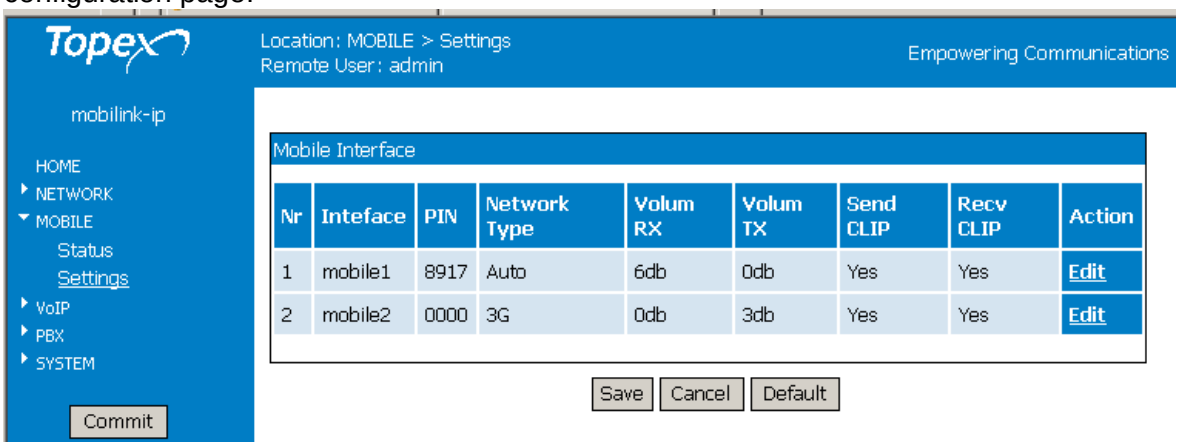


6.4.2 Settings

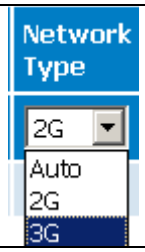
The settings for the two Mobile interfaces: here you may edit the parameters for each of the two cellular interfaces of the MobiLinkIP.



There are some differences, according to the type of modules in your actual equipment. If the mobile modules are for 3G+ network, and additional configuration field, "**Network type**", will show up in this configuration page.

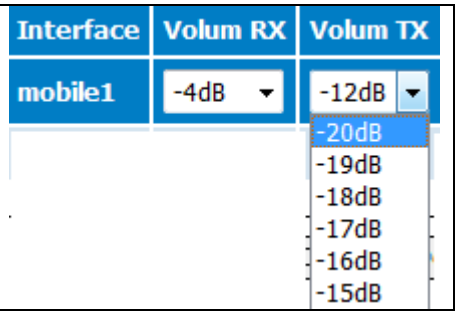


Click "Edit" of the Mobile Interface where you want to change the parameters:

Network Type - option concerning registering with the mobile network. Here one can establish the selection of the type of network to which the module will connect. *This option is available only in case of 3G modules!* The default is Auto, for automatic search, but one can make the module connect either only to 2G networks (GSM, GPRS, and EDGE) or only to 3G networks (UMTS/HSDPA).	

Volume

When the feature is active, one can modify the sound level both for the output – TX and input – RX of the voice channel. Note that this feature is not available for all types of modules; some GSM modules do not support this. Select Volume to change the audio level for **input** and **output.** The default is -12 dB, you can select to change the volume in 1 dB increments (from -20 dB up to an amplification of 6 dB).



One may use the "Default" button located at the bottom of the page to restore the default level for both input and/or output.

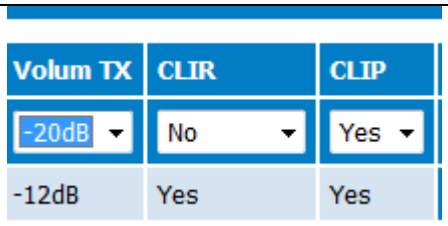


Definition of RX and TX
In this page for Mobile Settings, RX is the voice path coming form the mobile network towards VoIP, while TX is the reciprocal voice path, which comes form VoIP towards the mobile network.

Note1: Don't forget to use the button "**Save**" to store the changes performed over the audio volume.
Note2: The audio volume can be set up only when the State of the Mobile module is "ready", which means registered but not busy.
If the module was busy dialing a number, or sending / receiving SMS messages, it will not be available for **interrogation**, so the request to set a different audio level will not be applied.

Note3: Do *not change the audio level parameters unless necessary, as this may affect the voice quality.*

Send/ receive ID – one may select to **receive** and **send out** or not the Caller ID (presentation), by means of the fields CLIR and respectively CLIP.
ID is also called Automatic Number Identification.



CLIR – restrict the sending of identity
One may select to **send out** or not the Caller ID (presentation). When you choose **Yes**, MobiLink IP will perform **CLIR** - the identity of the call will **not** be sent (identity restricted). **No** means CLIR is disabled, so ID **will be sent –** the default setting.
Network means the sending or not of caller ID is established by the operator of the mobile network, according to the subscription of your SIM card.



See below an example of call with restricted identity, ANI shows up as "unknown":

outgoing	mobile1	26-11-10	14:23:18	000011	Unknown	0731040784	192.168.244.167

Warning: *Several services, including routing of calls, rely on the ID of the caller, if you select Yes, these services may no longer be accessed*.

CLIP - Receiving identity
Yes of No – the same applies for **receiving** the *calling line identification presentation.*
Note – *the options concerning CLIP enable or disable sending or receiving of ID for **all** the calls performed over the respective Mobile module*

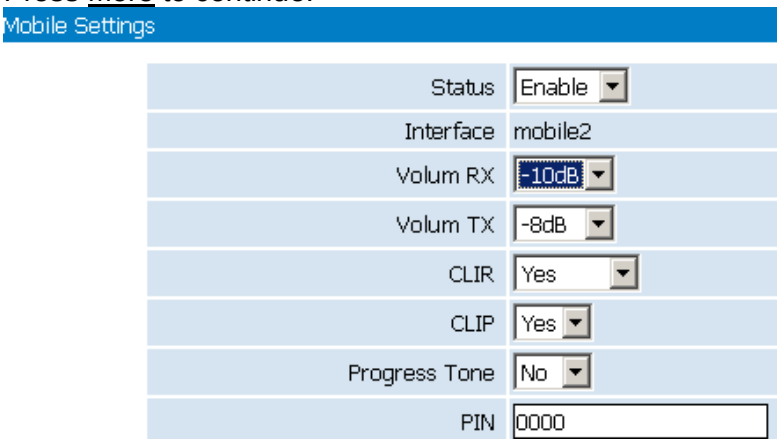


Action

The button to the end of each row shows either **Edit**, to edit it, or two options, **Exit** to quit editing the respective line of settings, and **More** to go to the following page for configuring the parameters of the mobile interface.



Press More to continue:

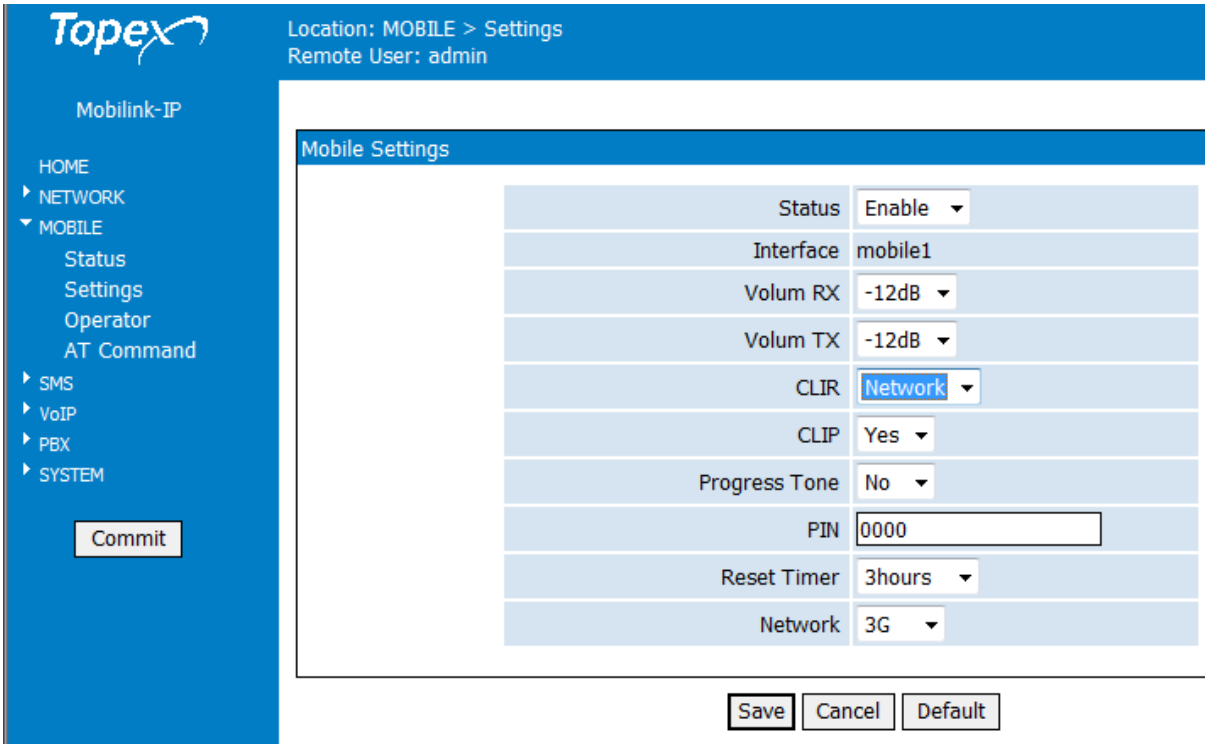


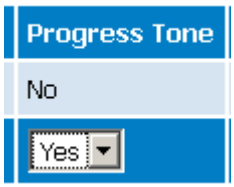
The window which shows up includes all the settings, for the respective module (mobile2 in this example).

There was no room to display all the settings in the previous table, which included all two or four modules, so if you need to edit all l the settings, you must use this kind of vertical window, for each module.

The fields Status, Volume for Rx and TX, CLIP and CLIR have been explained previously, here are also other parameters: progress tone, PIN, etc.

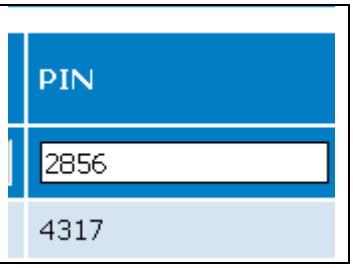
All these additional settings are explained below:





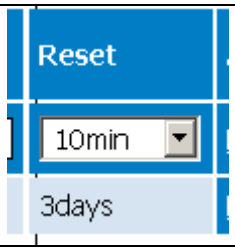
Progress Tone

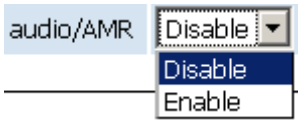
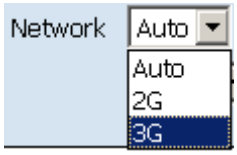
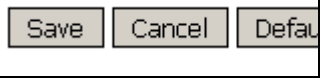
Enables or disables (default is Yes) the generation of audio tones that indicates the progress of establishing a call. When you choose No instead, no progress tones will be heard.

PIN – for each mobile interface, you can enter a PIN code. If you leave this field empty, or if you type a value of "0000", no PIN will be taken into account. Of course, this feature is active only when "PIN REQUEST" has been enabled for the respective SIM card!	

If you enable the request for PIN code, but you enter a value different from the real PIN of the SIM card, the module will be. So you must either enter the correct value, or disable the request for PIN on the SIM card!

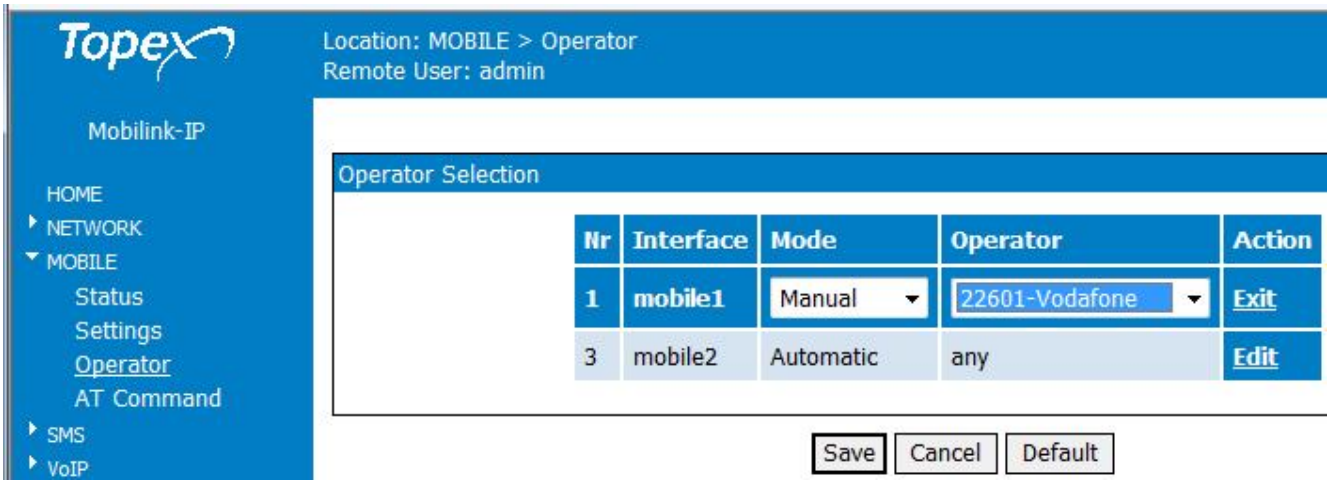
Warning – *you could reset the MobiLink IP device after you see that a SIM is locked by PIN (the orange LED lights up). But if you reset the equipment three times in a row, the limit for PIN request will be reached, the SIM will become permanently blocked, requiring the PUK code to work again!*

Reset Timer – for each module, you can set up a time interval following which the respective module will be resetted. Form the drop list that shows up, you can select None (default, no resetting), 5 minutes, 10 minutes, and so on, up to three days. This is an easy to use mean of programming a reset, if you need more advanced timing options you can use the option "**Cron**", which is implemented in the *System* configuration pages.	

The field **Audio/AMR** can be present or not, depending upon the actual type of mobile module used. It selects to Enable or Disable the usage of AMR coding for GSM calls. AMR coding is typically used for mobile calls with very good results, but, since it is optimized for voice calls, when you disable it, it favors receiving of DTMF over GSM.	
The last field shows up only for certain equipments (fitted with 3G modules) is N**etwork.** You can choose the technology of the mobile network to be used – either 2G (GSM/GPRS) or 3G (UMTS/HDSPA/HSUPA). The default is **Auto**, meaning the equipment looks first for 3G networks, and if they are not available, it will connect to 2G networks.	
Before leaving this section, choose one of the buttons at the bottom, Save, Cancel or Default.	

Finally, use Commit to make these changes permanent!

6.4.3 Operator Selection

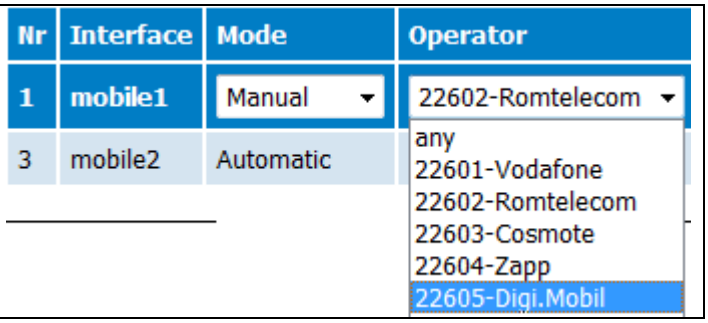


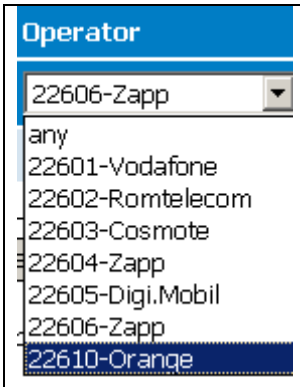
This allows you to lock each mobile module of the equipment to a specified network operator:

By default, both modules are set to Automatic, which means there is no locking, each module searches and finds its network carrier, according to the SIM used.

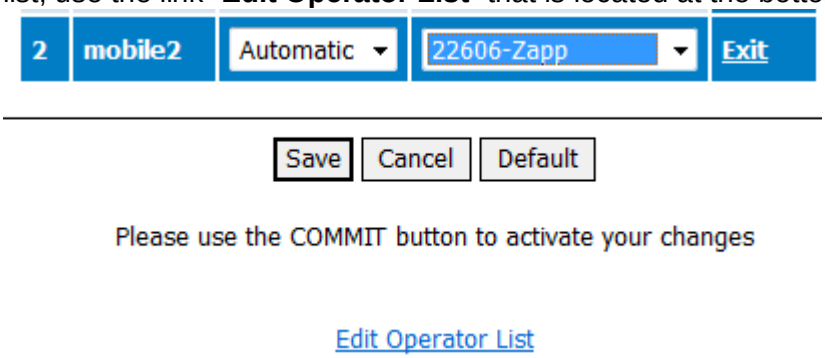
You can Edit the line for each of the two interfaces:

If you select **Manual**, then you must also choose a certain operator from the drop list.
When Operator is left to the default “any”, no locking is performed.





The “Operator” drop list shows the 5-digit code (22601, 22602 and so on) followed by the name of the respective network operator.
This list is country- and area- specific, so you should use a list corresponding to the mobile carriers which are active in your territory. To define / modify this list, use the link “**Edit Operator List**” that is located at the bottom of the page:



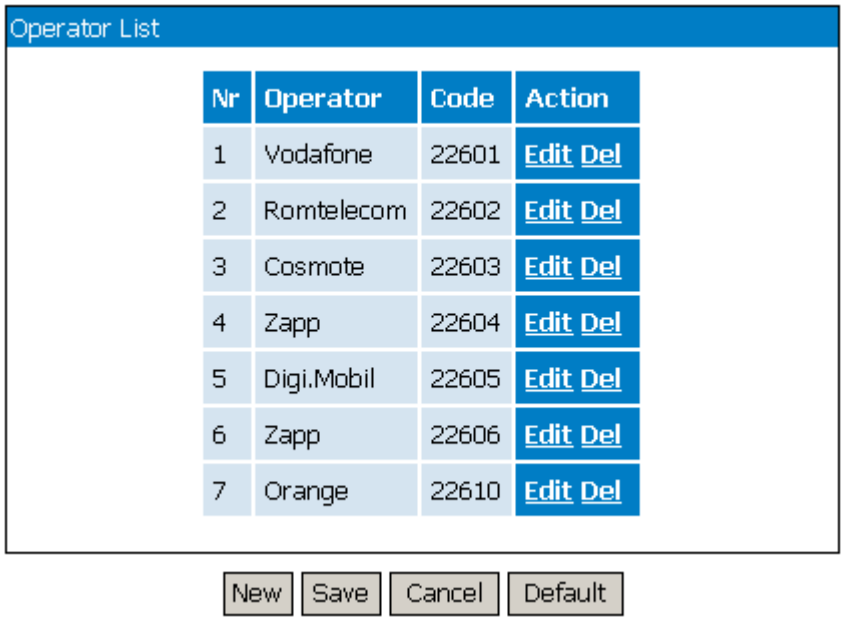
6.4.6 Edit Operator List

At first, this list is empty.

You may create new records in the list, edit them, save or delete each line of the table.

In the column “Operator” you enter the name of the mobile provider, while in the filed “Code” you type the corresponding international code.

The list in this example has been edited for **Romania**, and includes all mobile operators registered in our country.

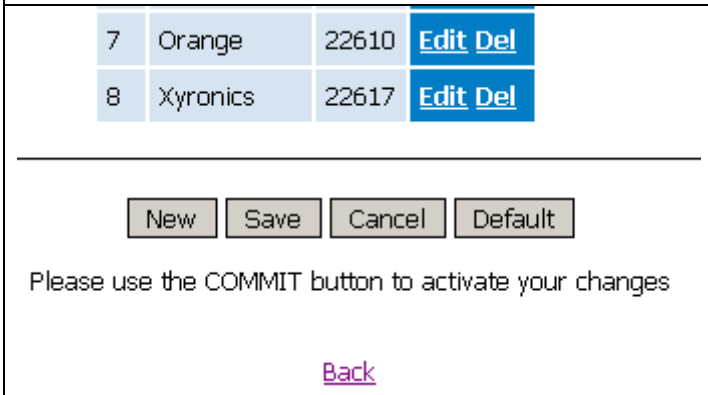


For instance, in the case of **Australia**, the Operator List will look like this

One.Tel	505 08
Telstra Mnet	505 01
VODAFONE AUS	505 03
YES OPTUS	505 02

While for **Spain**, the corresponding table with operator and network codes is the following:

E AIRTEL	214 01
E AMENA	214 03
MOVISTAR	214 07
MOVISTAR	214 02

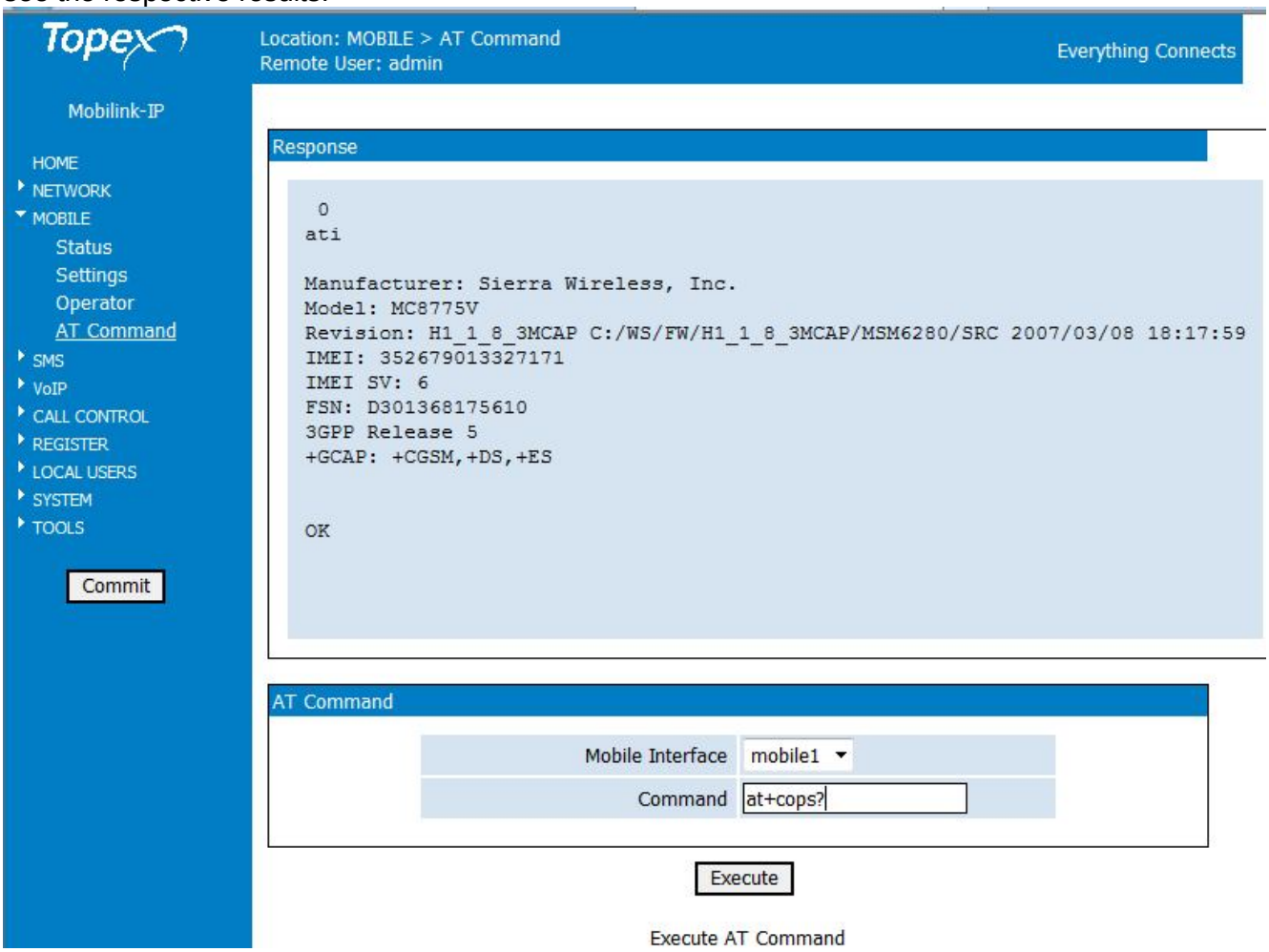


You can Edit the existing records, or add New ones to the list.

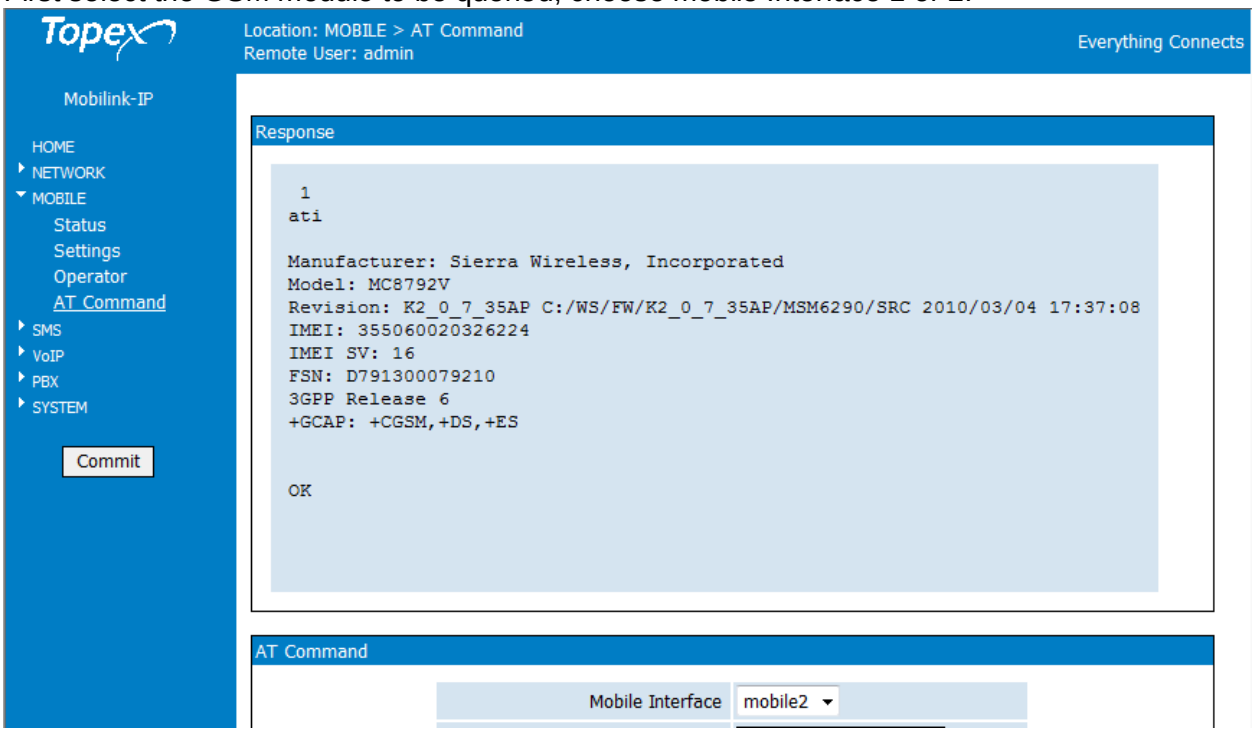
Save the new Operator List, then use the link “Back” located at the bottom to return to the page for “Operator Selection”.

6.4.4 AT Commands

The last page of the Mobile section allows you to send AT commands directly to the GSM modules and see the respective results:

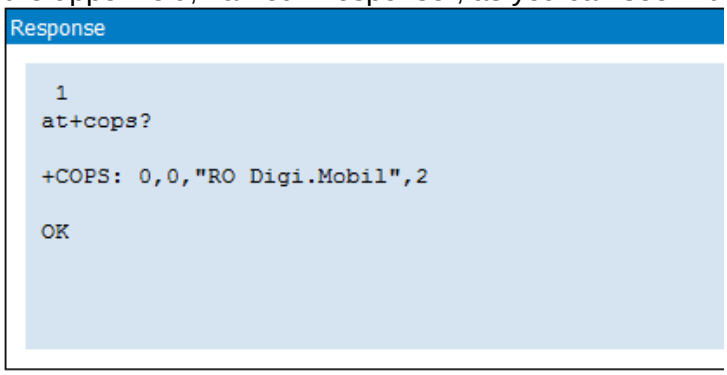


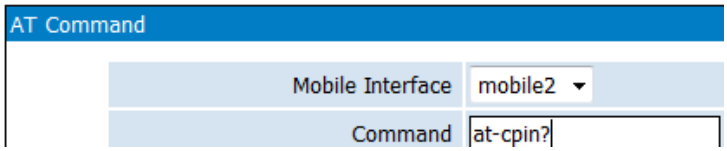
First select the GSM module to be queried, choose mobile Interface 1 or 2.



Then type in the field “Command” the AT command that you want to issue to the module, such as “ATI” which displays the type of mobile module, in the above example, or “AT+cpin?”, and press the button “Execute” to execute the command.

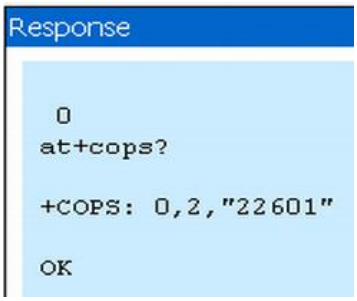
The command and the result (the response from the module to the query) will be displayed in the upper field, named “Response”, as you can see in the examples below for “AT+cops?”:

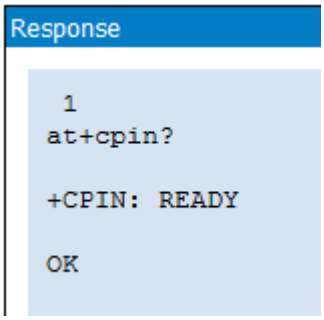


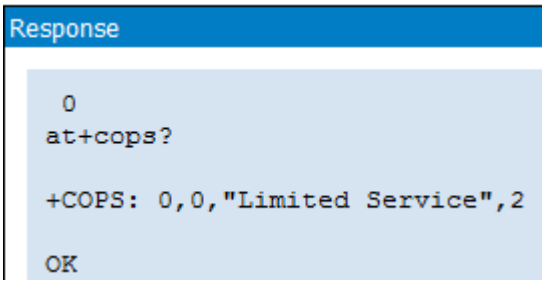


The *Response* field in the upper part of the screen shows:

- which mobile interface has been queried, by displaying a number above the command and the answer to the command, respectively 0 (for mobile 1) or 1 (for mobile 2)
- the command issued
- the response
- the result, either “OK” or “ERROR”.





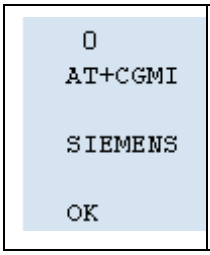


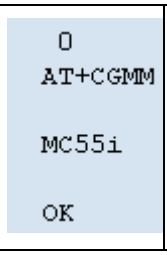
AT Commands

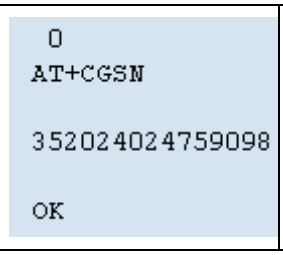
AT commands are instructions used to control a modem. Many of them, initially used to control wired dial-up modems, are also supported by 2G/3G modems and mobile phones. Besides this common (basic) AT command set, GSM/GPRS modems and mobile terminals support an extended AT command set, which is specific to the GSM technology. MobiLink currently uses internally such extended commands for voice, data and SMS, but with this configuration page, you can send commands directly to the wireless modems of the MobiLink IP equipment.

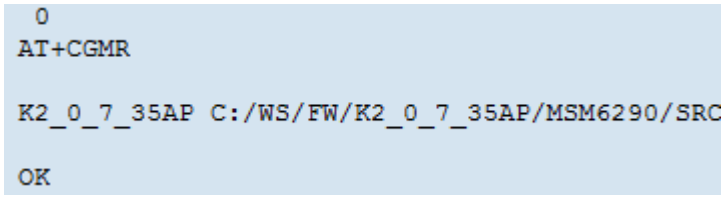
Some examples of such commands are shown below:

- Get basic information about the mobile modem. Such information may be the name of manufacturer (AT+CGMI), model number (AT+CGMM), IMEI number (International Mobile Equipment Identity) (AT+CGSN) and software version (AT+CGMR).









Get basic information about the subscriber. To find out MSISDN use AT+CNUM and for the IMSI code (International Mobile Subscriber Identity) use AT+CIMI.	0 AT+CIMI 226014052390876 OK
Get the current status of the mobile phone or GSM/GPRS modem. For example, mobile phone activity status (AT+CPAS), mobile network registration status (AT+CREG), radio signal strength (AT+CSQ).	0 AT+CSQ +CSQ: 19,99

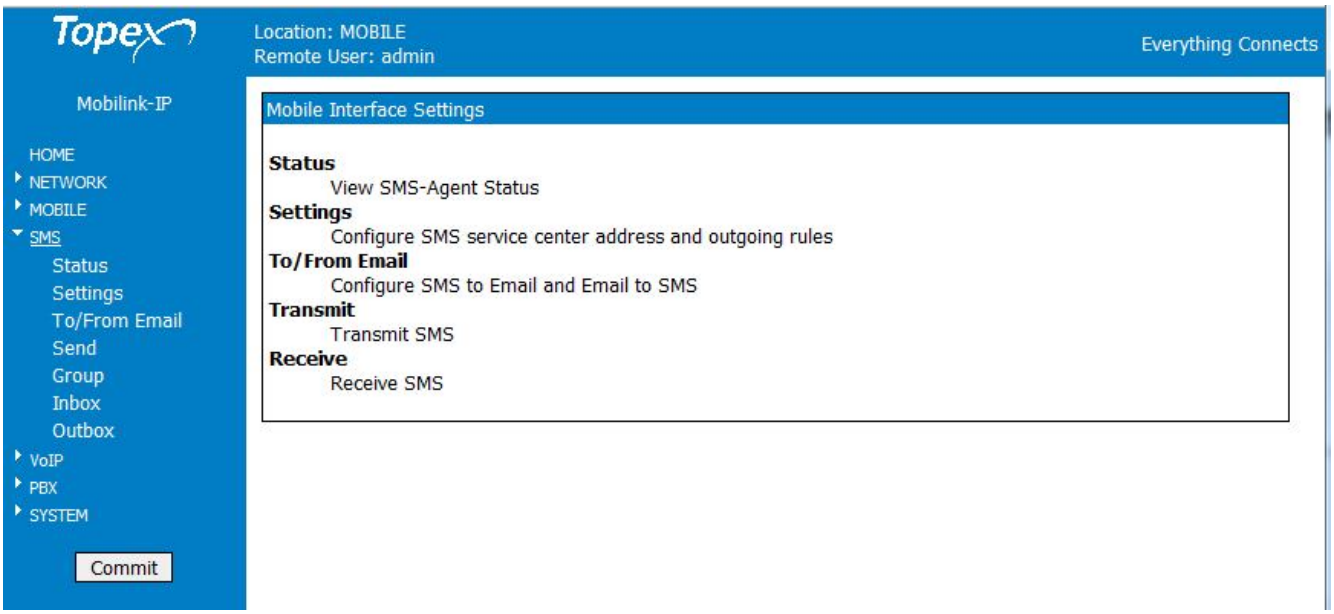
- Establish a data connection or voice connection to a remote modem (ATD, ATA, etc).
- Send (AT+CMGS, AT+CMSS), read (AT+CMGR, AT+CMGL), write (AT+CMGW) or delete (AT+CMGD) SMS messages and obtain notifications of newly received SMS messages (AT+CNMI).
- Control the presentation of result codes / error messages of AT commands. For example, you can control whether to enable certain error messages (AT+CMEE) and whether error messages should be displayed in numeric format or verbose format (AT+CMEE=1 or AT+CMEE=2).
- Get or change the configurations of the mobile modem. For example, change the GSM network (AT+COPS), bearer service type (AT+CBST), radio link protocol parameters (AT+CRLP), SMS center address (AT+CSCA) and storage of SMS messages (AT+CPMS).

0 AT+COPS? +COPS: 0,2,"22601"	0 AT+CBST? +CBST: 7,0,1	0 AT+CRLP? +CRLP: 61,61,78,	1 AT+CPMS? +CPMS: "MT",6,75,"MT",6,75,"MT",6,7

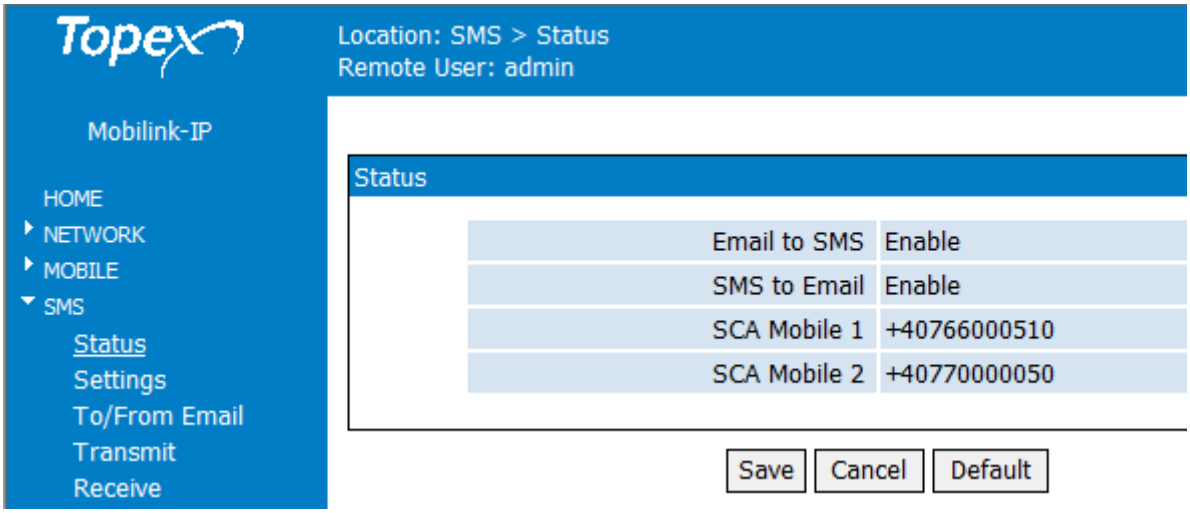
- Save and restore configurations of the mobile modem. For example, save (AT+CSAS) and restore (AT+CRES) settings related to SMS messaging such as the SMS center address.

6.5 SMS

Here are located all the settings for SMS functions: display status, establish configuration, set up parameters for SMS to e-mail and e-mail to SMS conversion, transmit or receive messages from the Web interface, group sending of messages to several mobile numbers:



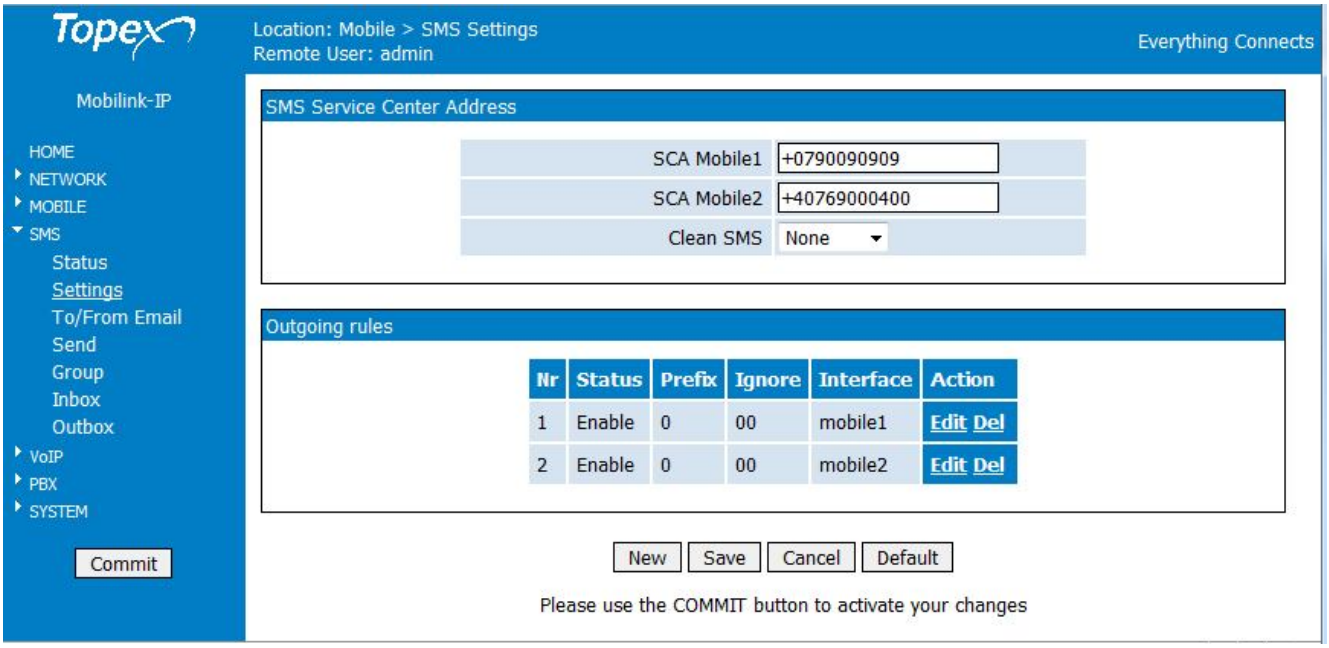
6.5.1 Status



Of course, Status shows the current STATE of the e-mail to SMS and SMS to e-mail features, and the addresses of the service centers for the two SIM cards.
Here you can only see information, you cannot change the settings.

6.5.2 Settings

The SMS settings include the SCA numbers, cleaning out of messages and the SMS outgoing rules:



SCA – SMS Service Center Addresses

The phone number of the service center is very important for sending out SMS messages, no matter if you send them from your cell phone, from the Web interface of MobiLink or from the E-mail-2-SMS program.

The SMSC (SMS center) is responsible for handling the SMS operations of a mobile network. It routes SMS messages sent from a mobile phones or terminals. When the recipient is not available (out of the coverage area, cell phone switched off), the SMSC will store the SMS messages. Later, when the recipient is available, the SMSC will forward the messages.

Generally the SMS centers are specific to each carrier, so in order to use SMS messaging with your terminal or with MobiLink IP, you must know the correct “address” of the SMSC for the operator of the respective mobile networks.

Typically an SMSC address is an ordinary phone number in the international format (ITU E.164/E.163), such as +20122000020 or +49-1715990000. There are also exceptions, for instance in Albania the operator AMC uses, following the country prefix +355, a “short” number for SMSC, “3820”.

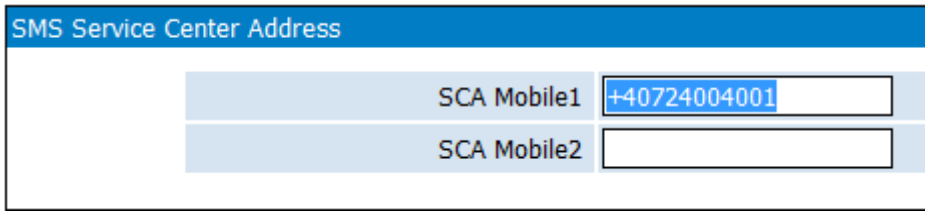
Normally, the SMSC address is pre-set in the SIM card by the respective mobile wireless network operator, which means **you do not need to make any changes to it**.

Also, most cell phones provide some means for the user to view and change the service center number saved in the profiles of settings, so you could set up or change the address of SMSC. For example, on several Nokia phones, the message center number saved in the default profile of settings can be viewed and changed by going to *Menu -> Messages -> Message settings -> Text messages -> Sending profile -> Default profile -> Message centre number.*

This means you can set up the address on the SIM, using an ordinary mobile phone, **before** inserting the SIM card into the MobiLink-IP device.

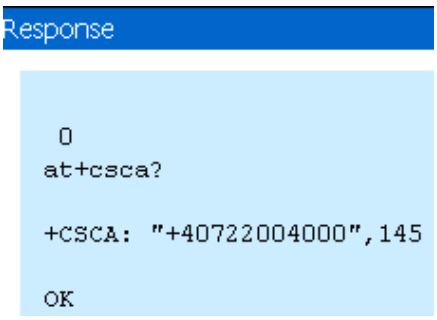
MobiLink-IP gets the SMSC address automatically from each SIM, but you can also change the SC numbers, if there is need to.

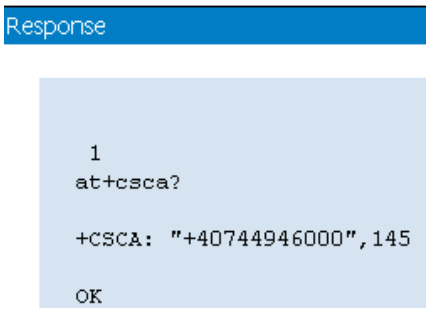
To perform this change, you can use the configuration page **SMS>Settings**:

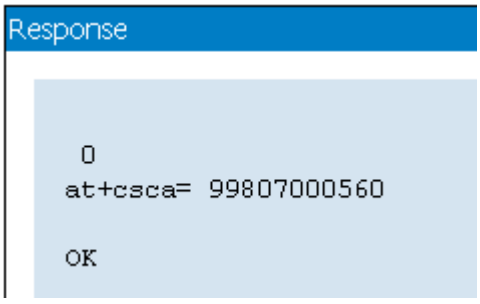


Alternately, you can perform this manually!

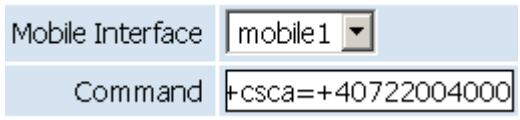
For this, go to the configuration page **Mobile>At Command** and use the command "**AT+CSCA**" (Service Centre Address) to read or set the address of the service center through which SMS messages will be sent out:



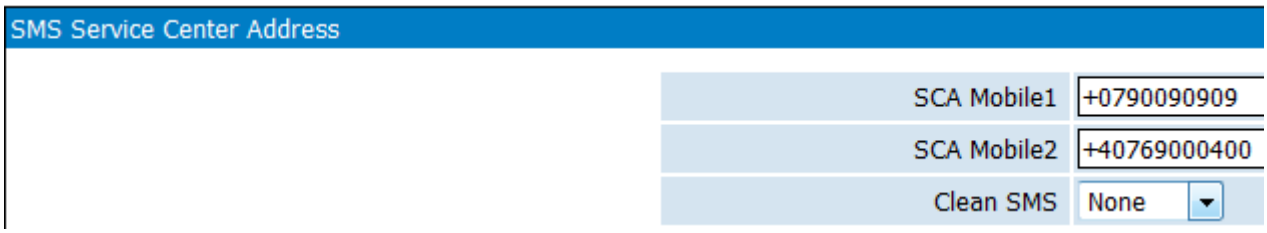




The command **AT+CSCA?** asks for the current SMSC address, while the command in format **AT+CSCA=number** sets up the new address to the phone number of your choice, such as the fictive one shown in the example to the left, or the one for Vodafone Romania, shown below:



CLEAN SMS



Provide a simple and easy to use setting for cleaning out the received SMS messages.

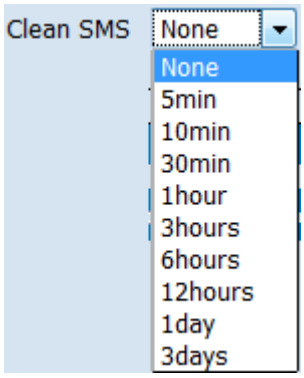
It is possible that you receive very many text messages, and most of them are of no further use after reading, so that you have to erase the received SMS, in order to avoid cluttering of the memory.

The “Clean SMS” feature performs automatic cleaning out (erasing) of the received text messages.

From the drop list, you may select the time interval for deletion.

The default value is None, meaning no erasing is performed.

You may choose one of the pre-set time intervals for cleaning out the SMSs: 5 minutes, 10 minutes and so on, up to “3 days”, which means that the messages will be erased every three days!



Outgoing Rules for SMS messages

Here you can define outgoing rules for the text messages, decide for each prefix, real or made up, which mobile module to use for sending out the SMS messages:

Outgoing rules

Nr	Status	Prefix	Ignore	Interface	Action
1	Enable	0	00	mobile1	Edit Del
2	Enable	0	00	mobile2	Edit Del

By default, there re only two rows, corresponding to the two mobile interfaces.
You may create **New** records, **Edit** or **Del**ete the existing ones

Outgoing rules

Nr	Status	Prefix	Ignore	Interface	Action
1	Enable	072	00	mobile1	Edit Del
2	Enable	077	00	mobile2	Edit Del
3	Enable	074	00	any	Edit Del
4	Enable	1	01	mobile1	Edit Del
5	Enable	2	01	mobile2	Edit Del

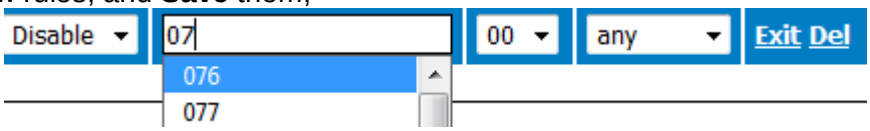
New Save Cancel Default

Nr	Status	Prefix	Ignore	Interface	Action
1	Enable	0	00	mobile1	Edit Del
2	Disable		00		Edit Del

New Save Cancel Default

At first the table has no rules, use New to add new records:

Then **Edit** the new rules, and **Save** them;

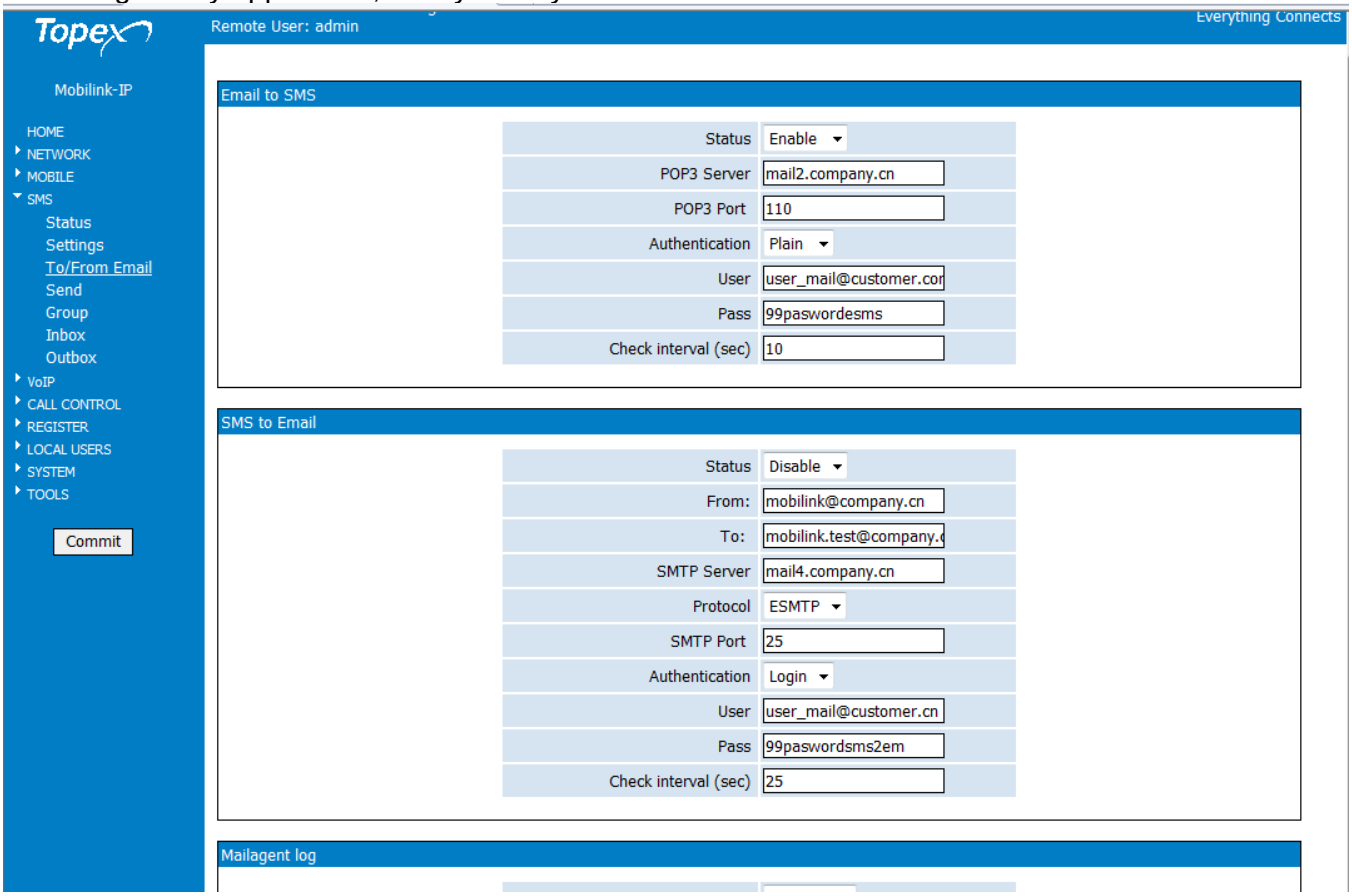


Explanation of the five outgoing rules defined in the first table:

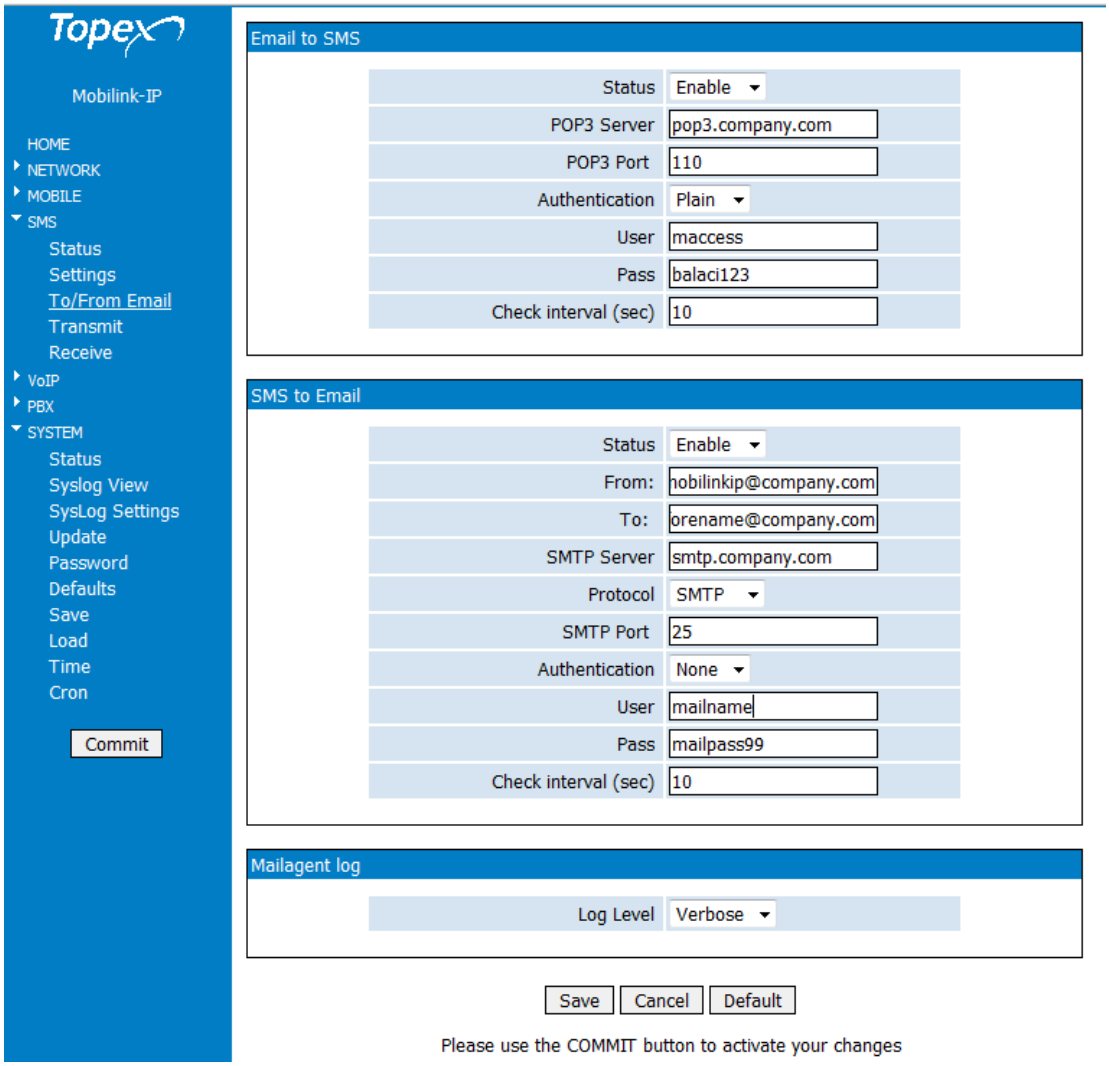
- you can assign “normal’, straightforward routes: text messages for destination numbers beginning with 072 will be routed via mobile1 interface, which has a SIM card for the network operator who has 072 prefixes, while text messages for destination numbers beginning with 077 will be routed via mobile2 interface, which has a SIM card for the network operator who has 076 prefixes, and so on.
- Finally, the rule no. 3 says that SMSs with 074xxxxxxx destinations may be routed through any available mobile interface!
- you can also force direct routing of messages, no matter which is the “real’ phone number of the destination.
- For instance, if you want to output a text message through mobile1 interface, you dial a “1” before the destination number. The message will be routed via interface1, and the fist digit, which was not a real one, will be ignored.
- Similar, when you want to use the mobile2 interface, you will dial a “2” before the destination telephone number.

6.5.3 To/From E-Mail

This page controls the E-mail2SMS and SMS2E-mail features. First, you set up the parameters for the mail gateway application, then you may decide to enable or disable each of the features.

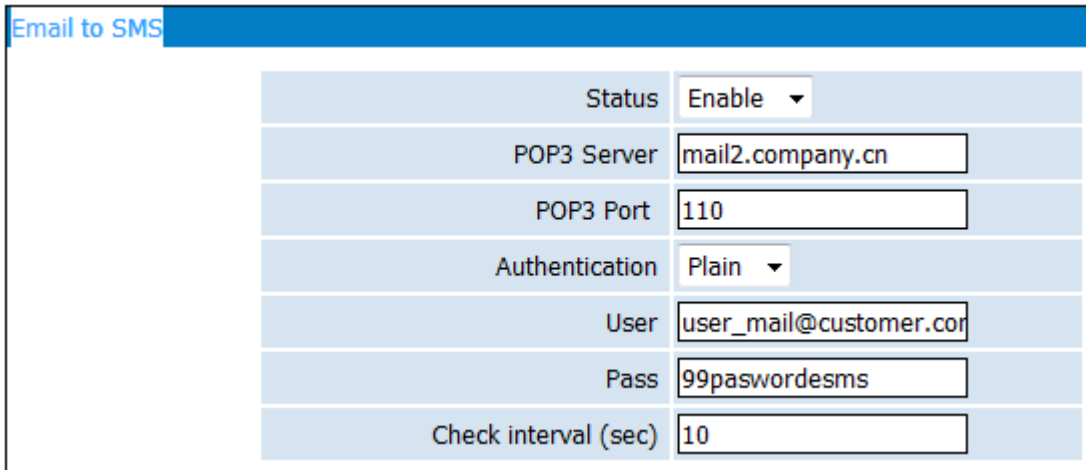


For instance, when SMS to Email is disabled, as shown in this example, the received messages will be shown in the “Receive” page. If you enable this feature, the SMS messages, as soon as they are received, will be sent out as e-mail messages, and then erased.

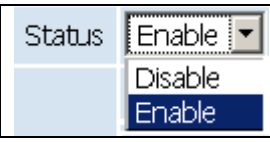


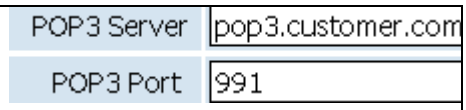
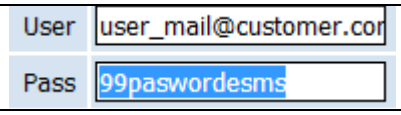
E-mail to SMS

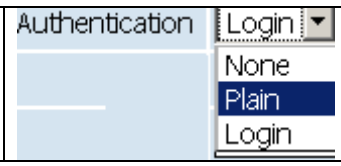
Settings for sending out of e-mail messages as SMS:

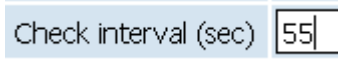


You should use a special (dedicated) e-mail account for this.

Status: you must **Enable** this feature, in order to use it. By default it is disabled.	

Settings for the incoming mail server (POP3), the address and the port to be used for the "customer". Some mail server may use different port numbers, such as 465 or 991, instead of the standard one – default value is 110.	
User name and associated **password** for the mail account "SMS Outbox". The User must be in form of: user_mail@customer.com	

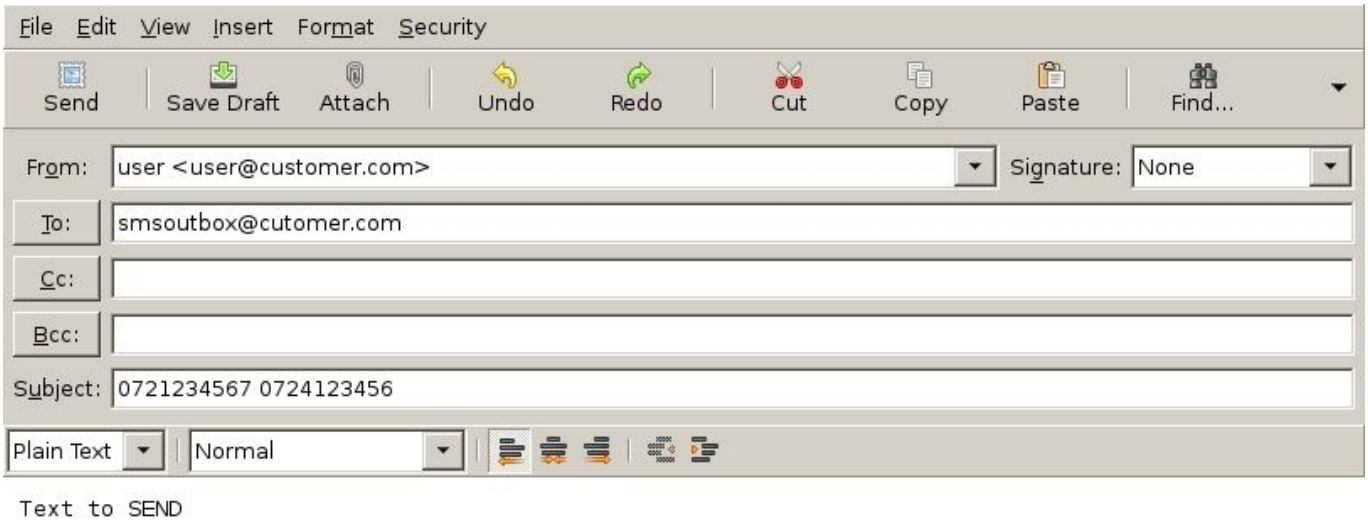
Authentication – method used for authentication, must be set according to the actual requirements of the POP3 mail server.	

Check interval – you set the value, in seconds, when MobiLink IP checks for new e-mail messages to send out as SMS	

Using E-mail to SMS feature

You must set up your mail client accordingly.

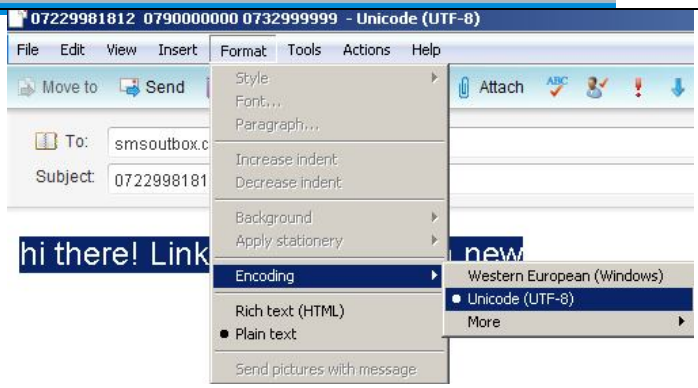
The messages are sent out from the account called "User@customer.com" and the destination is "SMS Outbox".



The message must be sent as **Plain Text**, not HTML, and will be cut (truncated) at 160 characters.

Also, you should use either ASCII or Unicode (UTF-8) encoding.

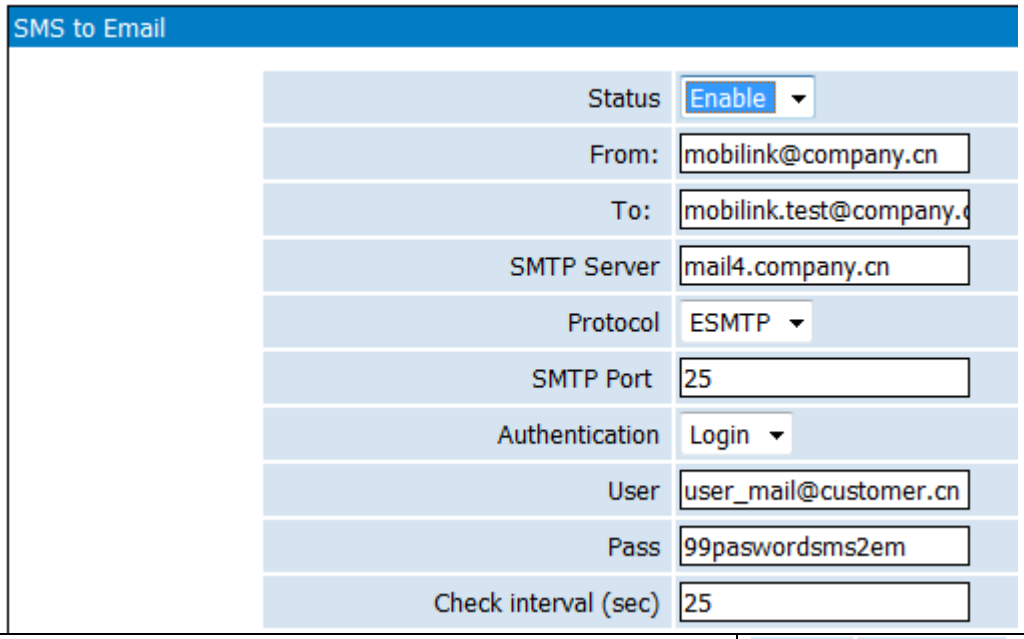
In the “Subject” field, enter the phone numbers(s) as destination for the SMS.
You may type a single mobile number, or several phone numbers, *using blank space as a delimiter,* as you can see in this example.



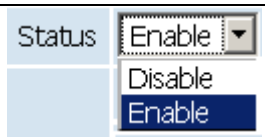
The respective e-mail message will be sent out as a SMS to all the mobile phone numbers you have entered in “Subject”.

SMS to E-mail

Settings for the reciprocal feature, which converts received SMS into e-mail messages



Status: you must Enable this feature, in order to use it.
By default it is also disabled.
When you **Enable** SMS-to-Email, the received messages will no longer be seen in Inbox, because they are deleted as soon as they are sent out as E-mail messages.

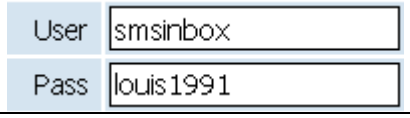


From/To mail settings.

In the FROM field you can enter any address, it is not a “real” e-mail sender. However, you should use a meaningful name.



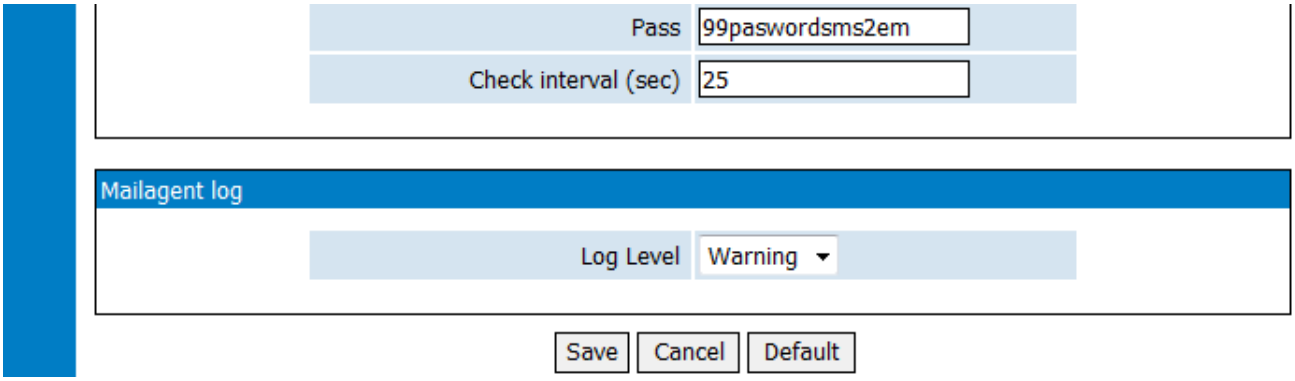
In the above example, the secretaries at “office” will know that the e-mails coming from the sender “SMS Inbox” are in fact converted SMS messages, and may set up their mail client to process these messages accordingly.

Settings for the incoming mail server (SMTP), the address and the port to be used for the "customer". Some mail server may use different port numbers, such as 3535, instead of 25 which is the standard one.	
User name and associated password for the mail account SMS inbox.	

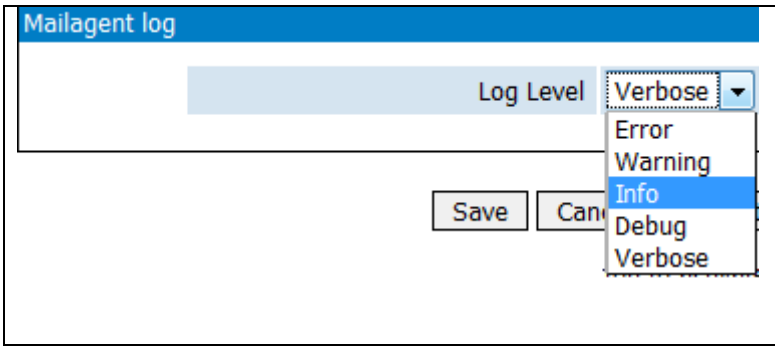
Authentication – method used for authentication, must be set according to the requirements of the SMTP mail server. You may choose either no authentication, plain text password, or with log-in.	

Check interval – you set the value, in seconds, when MobiLink IP checks for new SMS to send out as e-mail messages	

Mail agent log



At the bottom of the mail configuring page, there is the Log Level setting.



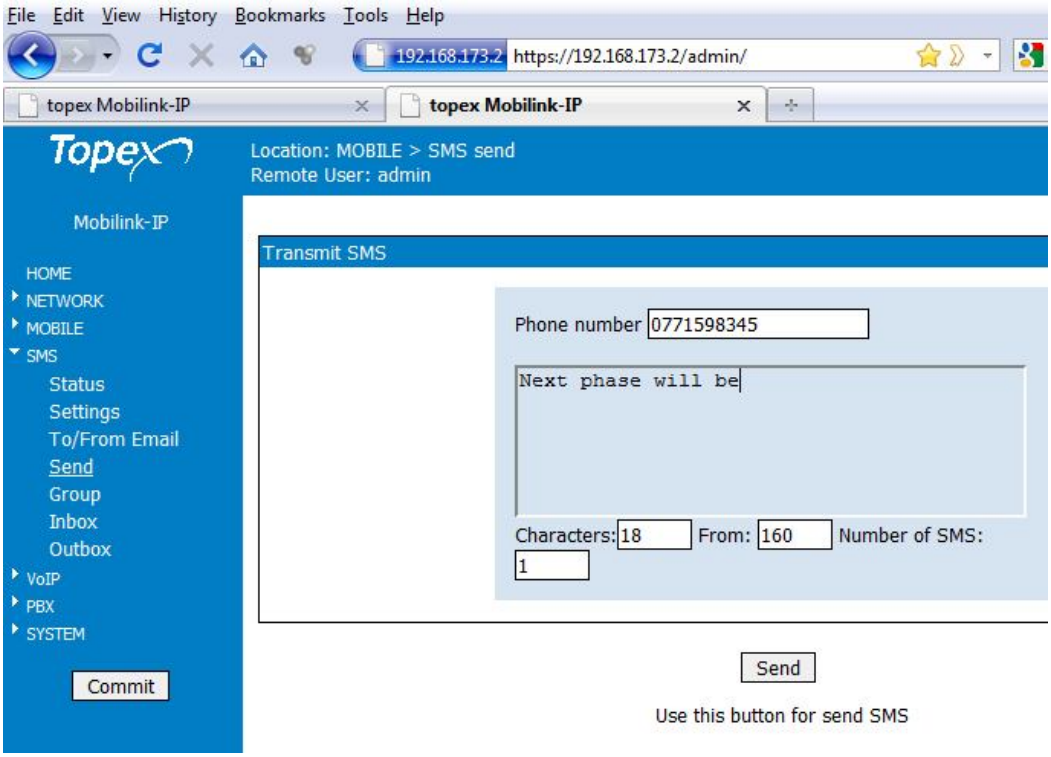
Here you can set the log for the Mail Agent, the application which performs conversion between e-mail messages and SMS. The operation of this program will be logged into the Syslog file.

You can choose the level of details, from Error (only the errors are recorded) up to Verbose (the most detailed, everything is recorded).

*Don't forget to use **Save** and **Commit** when you want to make the changes permanent, or **Cancel** and a reset if you decide you don't need the modifications!*

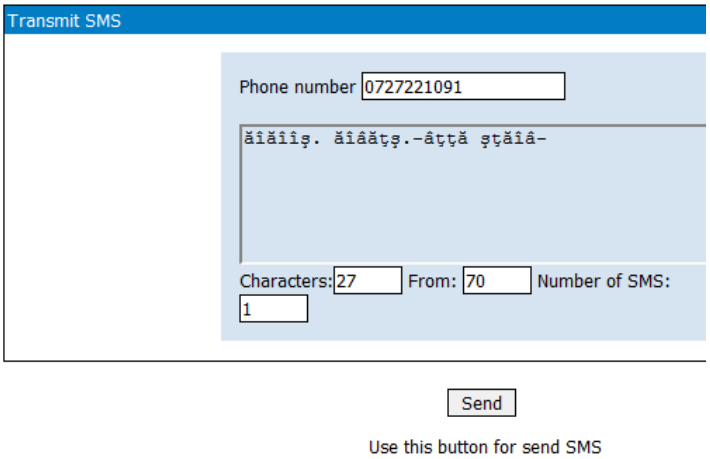
6.5.4 Send

Use this page to send out SMS messages form the Web interface of MobiLink-IP.



First, type the phone number where the SMS will be sent. Then, write the text to be sent. You may type it from the keyboard, or use Copy and Paste to import text from other applications (mail, word processing, etc)
For ASCII characters, the maximum length is the standard one for SMS, **160 characters**.
The window “Characters” show you how may characters you have already typed, 18 out of 160 in the above example.

Non-ASCII text
MobiLink-IP allows you to send also **non-ASCII** characters, for alternate character sets such as Cyrillic, Greek, Hebrew or Central European, but in this case the maximum length is only **70 characters**, as shown in the next example:



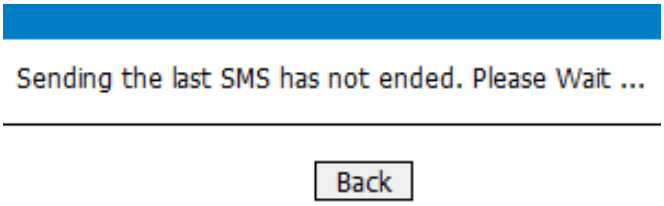
To send the message, press the Send button located at the bottom!

You will see the message “SMS is sending, please wait”:



Then, in case of successful transmission, you will see as confirmation the message in Outbox.

When the message could not yet be sent, you will see a warning instead:

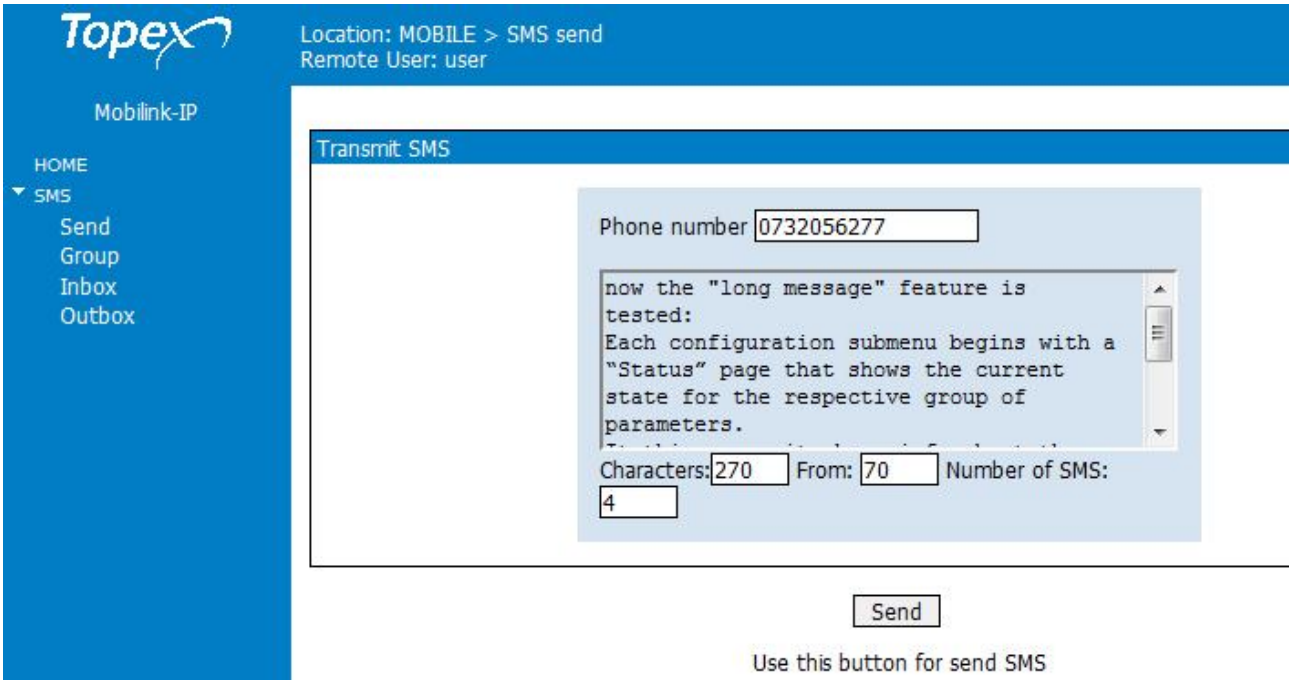


Use the Refresh or Reload button of your browser to get out of this page.

Long Messages

As mentioned, the maximum number of characters for a standard SMS is 160 characters in case of ASCII messages or 70 in case of non-ASCII characters. But you can send even longer text messages – they will be broken into several consecutive SMS, and sent one after another to the destination number.

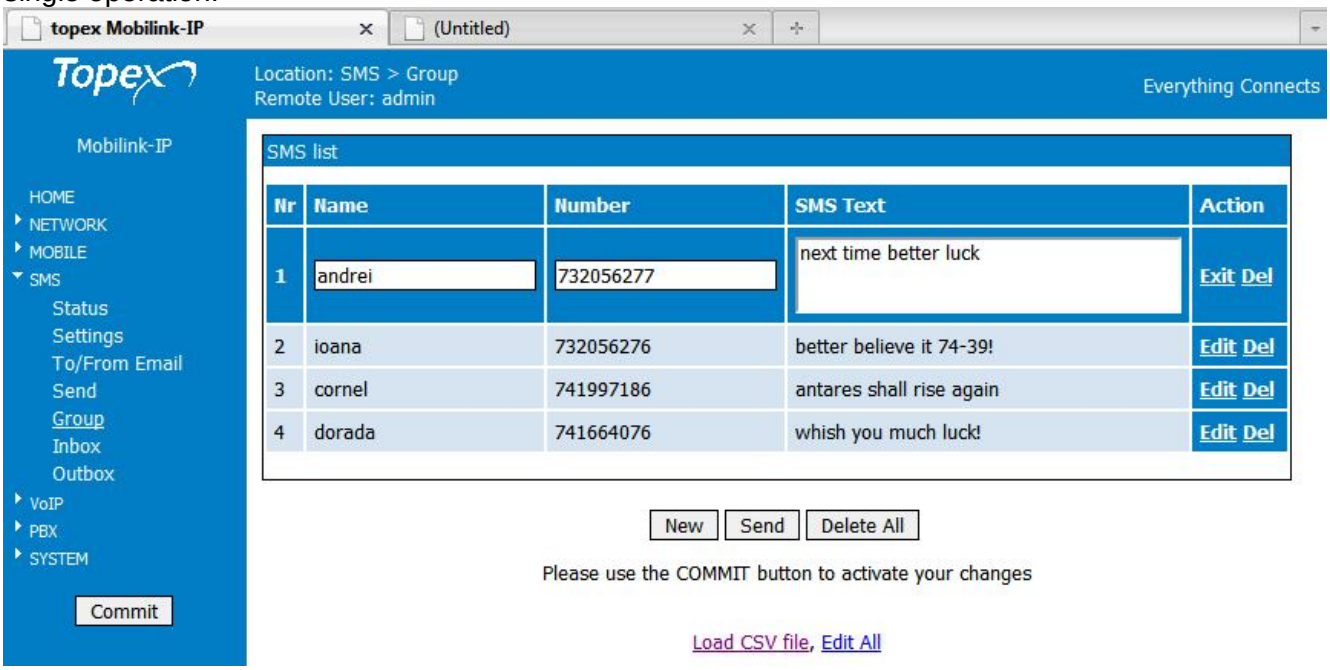
The last box at the bottom of the “Transmit SMS” window shows you the “number of SMS” – this is 1 for a normal message, less than 160 characters long, or 4 in the example below:



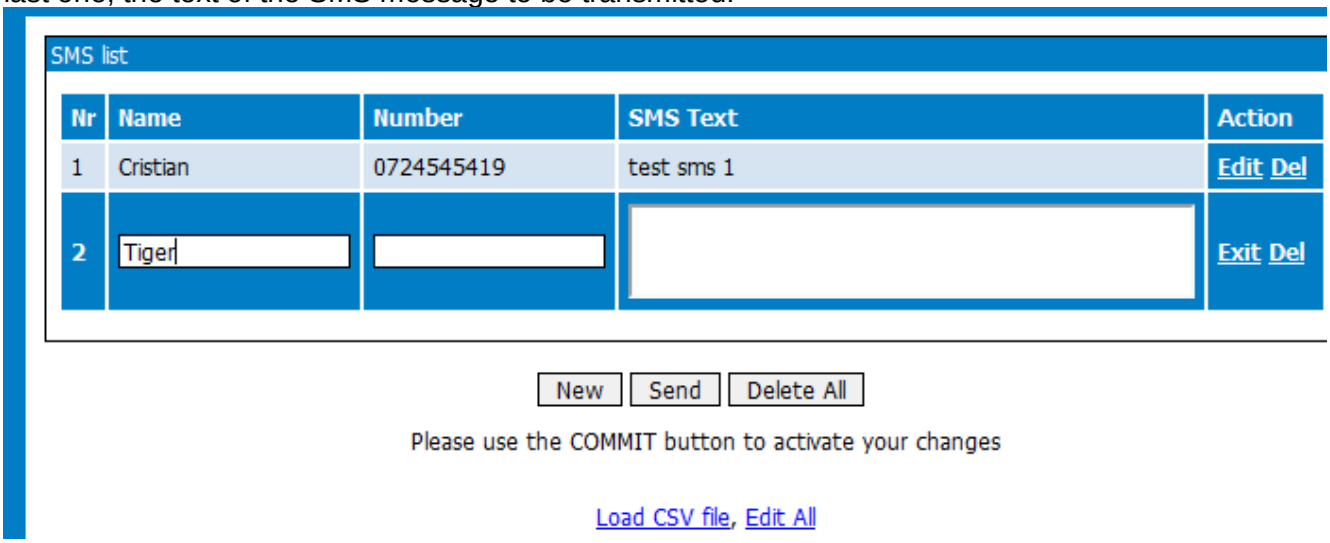
This means that the long message, with 270 non-ASCII characters, will be sent out as a succession of four SMS messages with a maximum length of 70 characters each!

6.5.5 Group

This feature allows you to send group messages, that is text messages to several phone numbers, in single operation.



At first, the SMS list is empty, use **New** to create a new record and **Edit** to modify it:
The first field is the name of the recipient of the message. This name is meaningful for the human operator only, MobiLink IP has no use for it. The next field is the destination phone number, and the last one, the text of the SMS message to be transmitted:



After you finished editing all fields in a row, the buttons at the bottom change, allowing you to **Save** the edited messages or to abort the current editing with **Cancel**.

SMS list

Nr	Name	Number	SMS Text	Action
1	mihai	0791111111	another terminal should be connected	Edit Del
2	alexis	0791111110	but this time try not to get overrun	Edit Del
3	florentina	0729999999	hello flory, record the new code for acquisition	Edit Del
4	betsy	074		Exit Del

New Save Cancel Default

When you have finished editing all rows, the buttons at the bottom change again, now you have the option to press **New** to create another entry, **Send** to transmit the messages, or **Delete All** to delete all the SMS rows in a single operation.

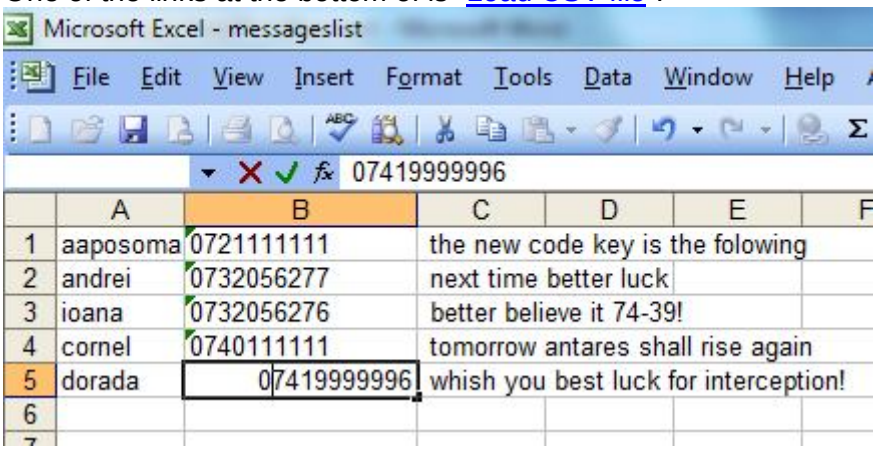
SMS list

Nr	Name	Number	SMS Text	Action
1	mihai	0791111111	another terminal should be connected	Edit Del
2	alexis	0791111110	but this time try not to get overrun	Edit Del
3	florentina	0729999999	hello flory, record the new code for acquisition	Edit Del
4	betsy	0740000000	destroy immediately the critical papers!	Edit Del

New Send Delete All

Load CSV

One of the links at the bottom of is "Load CSV file".



You can use it to load a **CSV** (comma separated value) file previously created that holds the names, telephone numbers and messages to be sent.

Such a file may be created by using Microsoft Excel or a simple text editor, such as Notepad.

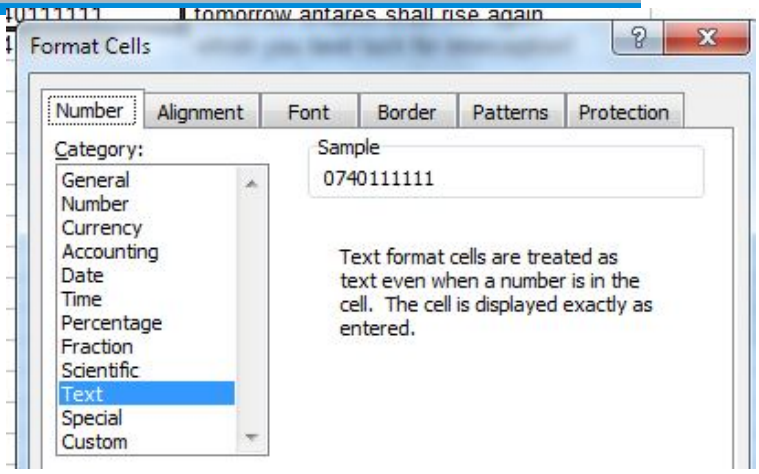
The values for name, telephone number , and text of the message must be separated by commas.

NOTES:

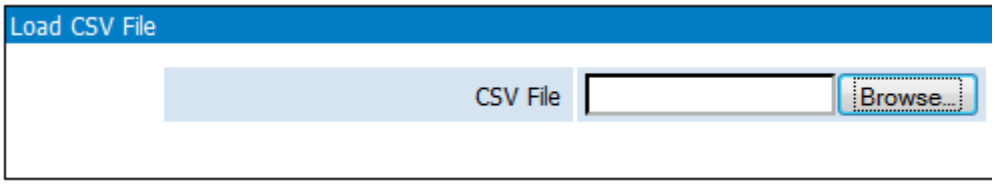
- Remember to select, for formatting the Excel cells, the option Text for the telephone number.

If you use the option “number”, or the default “General”, it won’t work, because Excel will eliminate the leading zero from the telephone number!

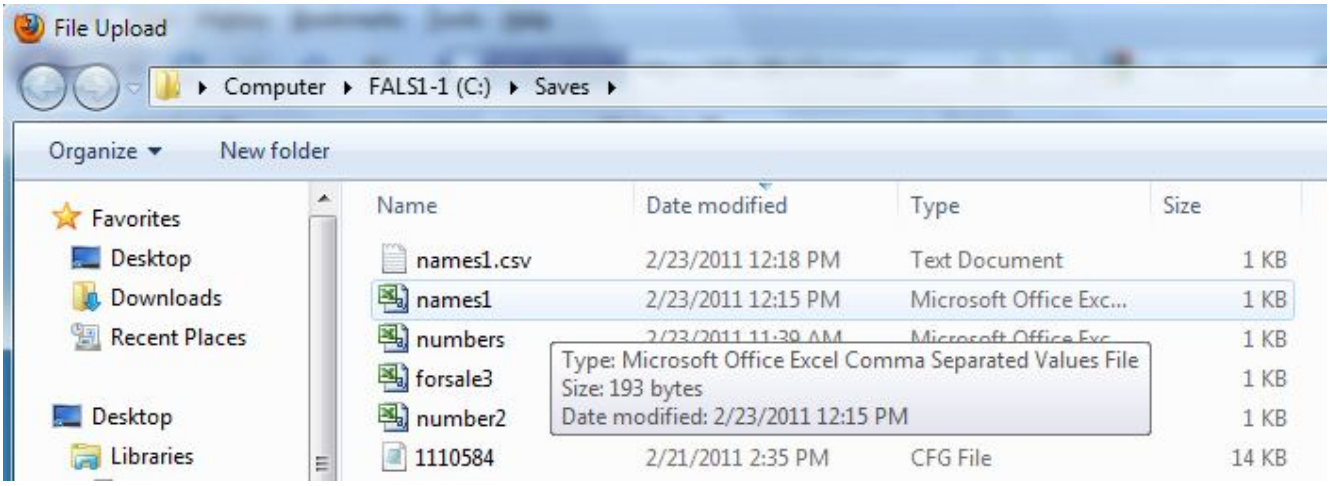
- Since the comma is the separator, the text of the message must NOT contain any comma. If it encounters a comma, the program will “believe” that this is the end of the text and not consider the rest of the text.



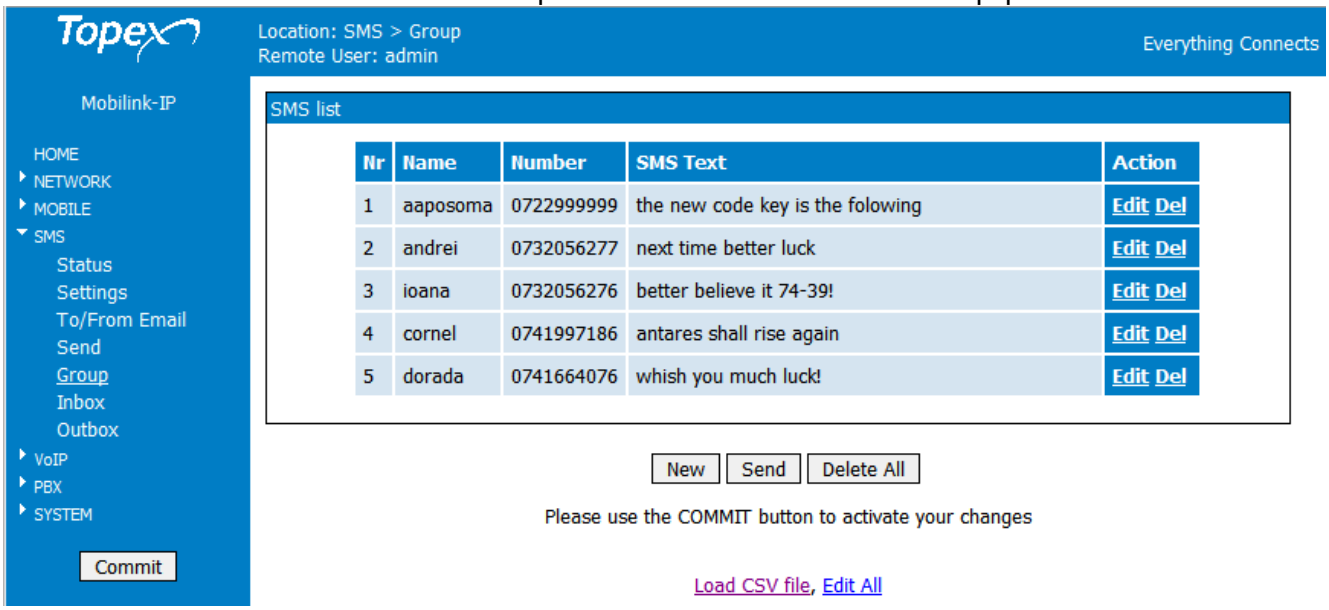
Use the **Browse** button to look for the .csv or .txt file to be loaded:



Navigate in the folders of your computer, and select the .csv file of interest to you:



Then use the button **Load** to load the respective file into the MobiLink IP equipment.

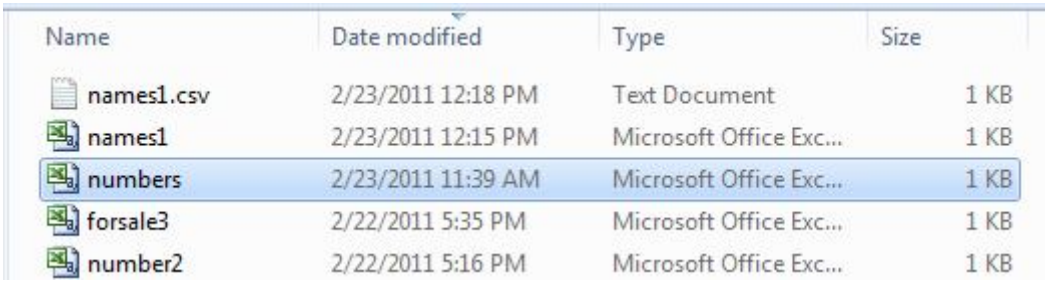


You can review, edit or delete each row of the SMS list (every line corresponds to a SMS message), then press **Send** to send out all the messages.

Of course, the transmission can't be simultaneous, MobiLink IP sends out the messages one after another, starting with the one located at the bottom.
Following a successful transmission, the messages will be automatically deleted.

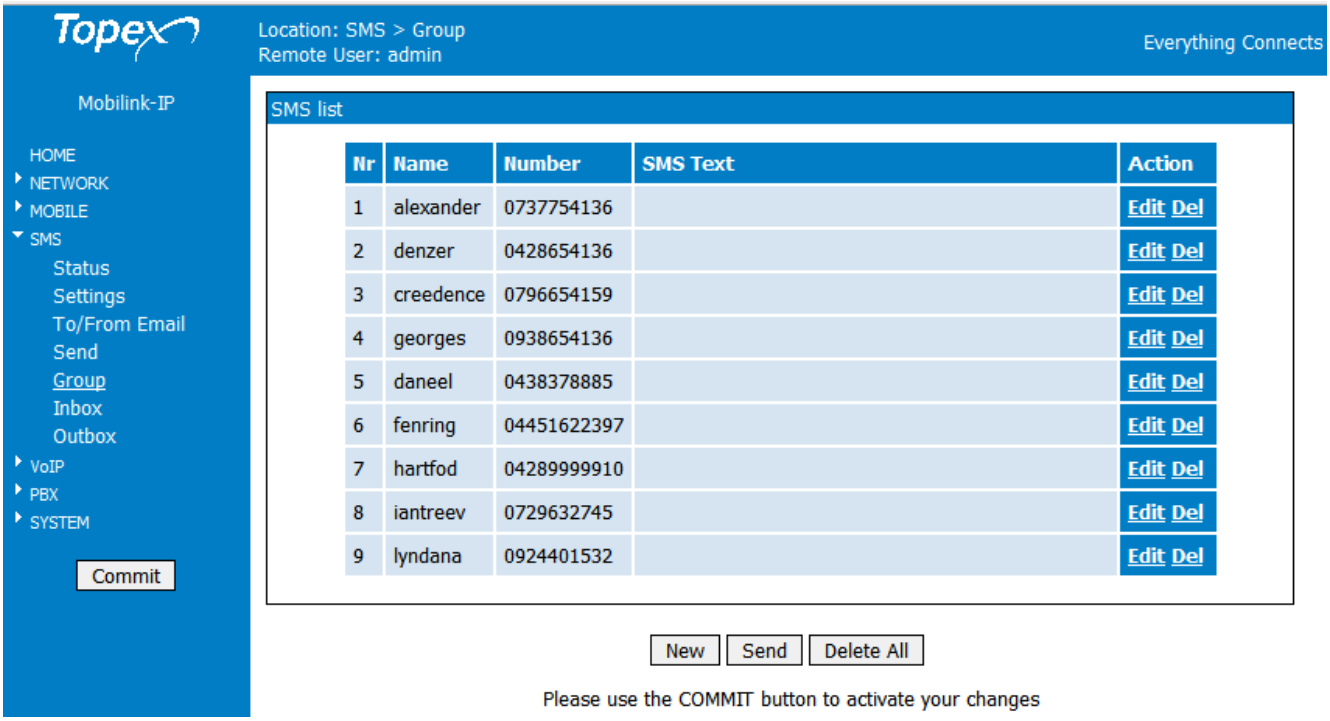
Group sending of a common message

A variant of the group SMS operation is when you need to send a single message to several recipients (phone numbers). This is a particular case, when the CSV file contains only names and telephone numbers, the "text" filed is empty.
To send out the same text message to several destinations, load the CSV file with the corresponding numbers:

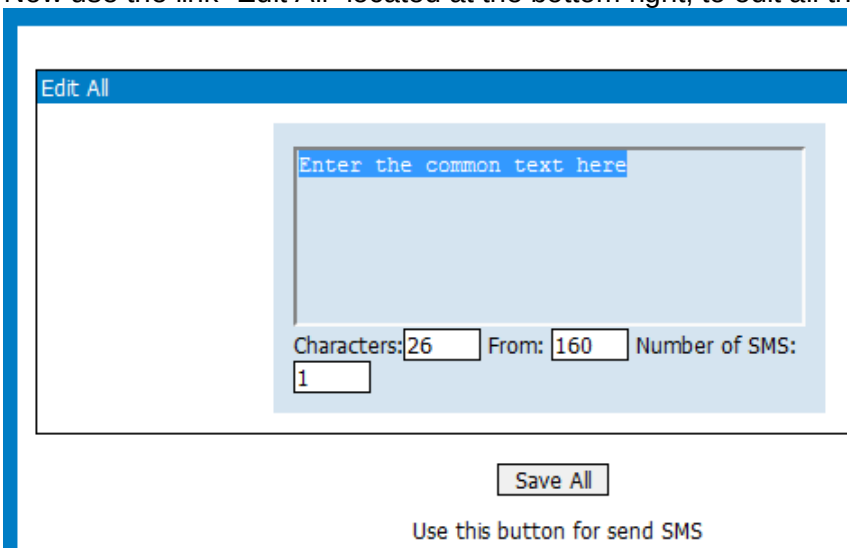


Name	Date modified	Type	Size
names1.csv	2/23/2011 12:18 PM	Text Document	1 KB
names1	2/23/2011 12:15 PM	Microsoft Office Exc...	1 KB
numbers	2/23/2011 11:39 AM	Microsoft Office Exc...	1 KB
forsale3	2/22/2011 5:35 PM	Microsoft Office Exc...	1 KB
number2	2/22/2011 5:16 PM	Microsoft Office Exc...	1 KB

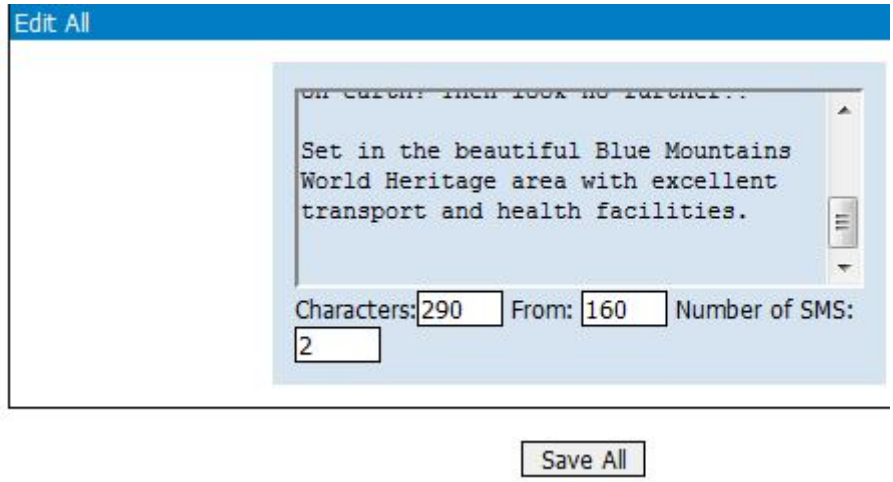
You will see a SMS list with names and corresponding telephone numbers, but without any text for the SMS message to be sent out (the fields "SMS text" are empty):



Now use the link “Edit All” located at the bottom right, to edit all the SMS Text fields at once:



In this window, you can either enter the text by typing, or paste it from a location where you copy the text of interest:



Use “Save All” button to save this text into all the rows of the SMS list:

SMS list

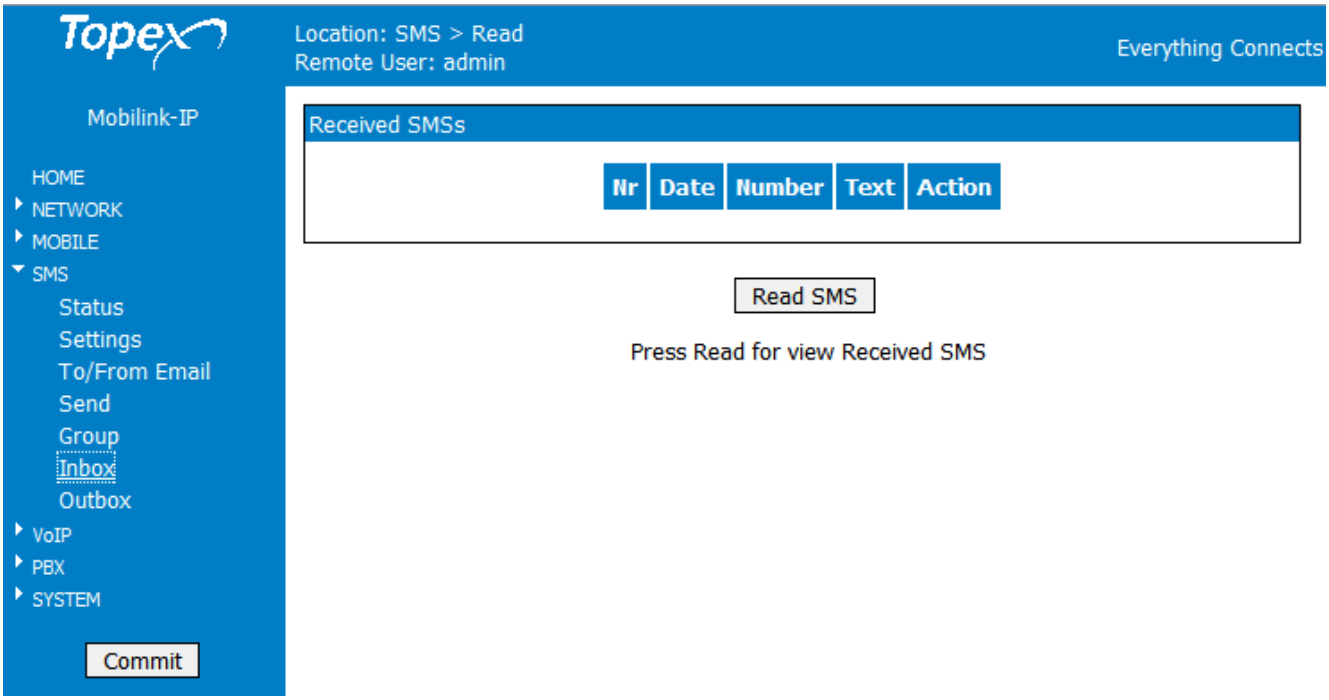
Nr	Name	Number	SMS Text	Action
1	alexander	0737754136	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
2	denzer	0428654136	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
3	creedence	0796654159	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
4	georges	0938654136	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
5	daneel	0438378885	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
6	fenring	04451622397	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
7	hartfod	04289999910	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
8	iantreev	0729632745	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del
9	lyndana	0924401532	Blue Mountains for the discerning buyer ($715 000) Blue Mountains, New South Wales Advertiser type: Private Sale Looking for a piece of heaven here on earth? Then look no further!! Set in the beautiful Blue Mountains World Heritage area with excellent transport and health facilities.	Edit Del

New Send Delete All

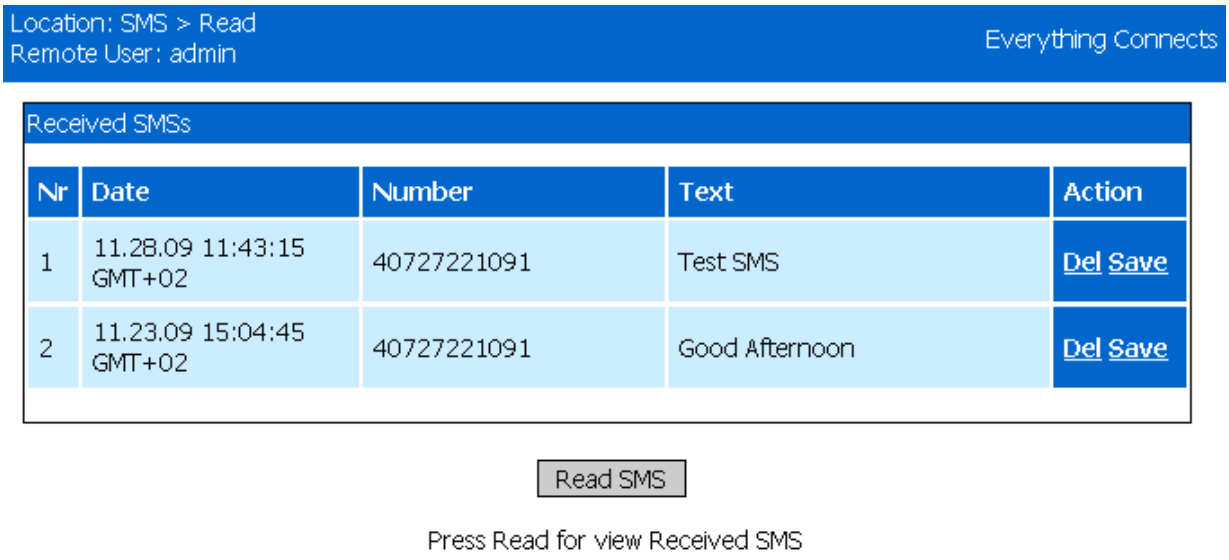
Now you can start the process of transmitting the common message to all the destination numbers by simply pressing the **Send** button!

6.5.6 Inbox

Here you can see the SMS messages received over the mobile modules of the MobiLink IP equipment.



Click the “Read SMS” button to refresh the list of messages:

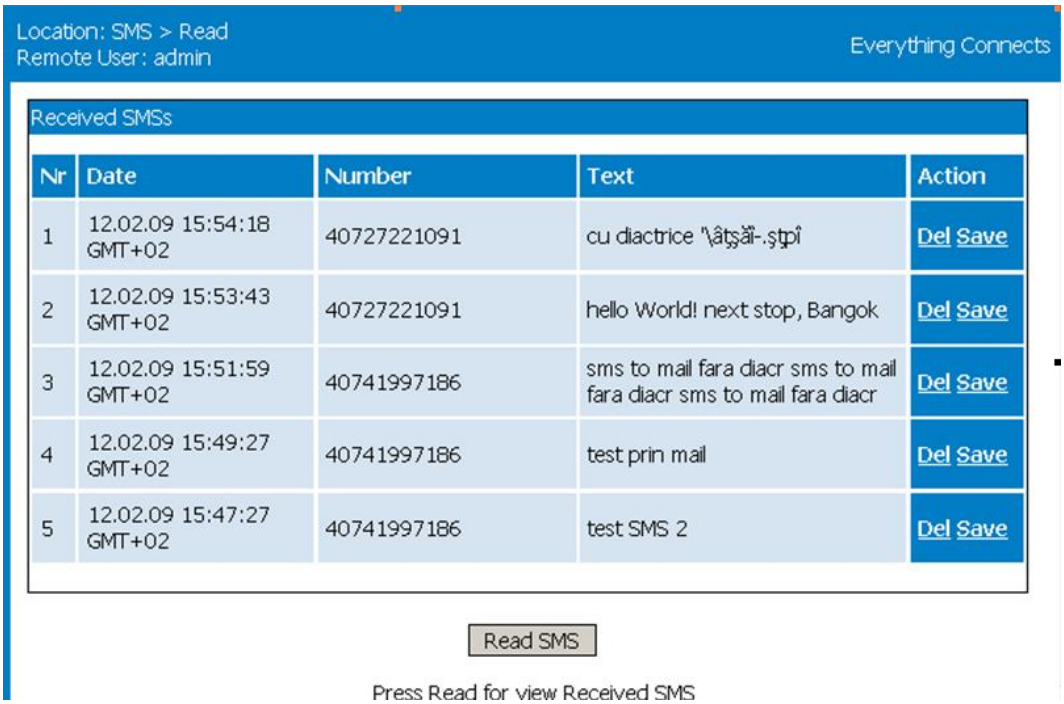


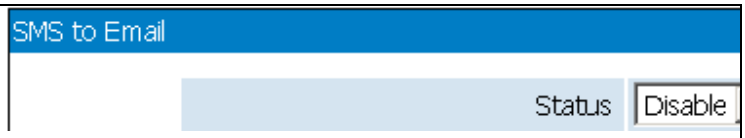
Date: shows not only the date, but also the time when the message has been sent, up to seconds. Also, the time zone, such as GMT+2 in case of Bucharest. Remember, this is not the time when the SMS was received by MobiLink IP, but rather when it has been transmitted, usually set by the mobile carrier.

Number: phone number that has sent the SMS.

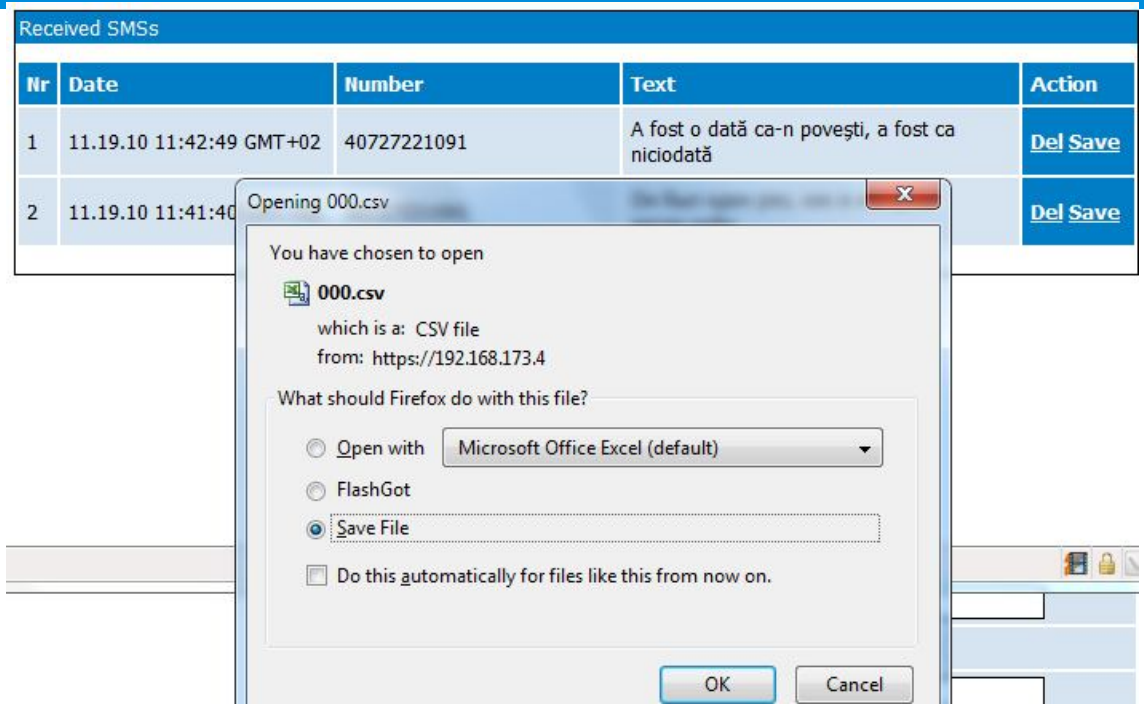
Text: the text of the message.

You can Delete or Save each of the received SMSs. These messages are stored in the volatile memory of the equipment, so if one SMS is of high interest, it should be save onto your computer, because it will be lost each time MobiLink IP is re-booted.

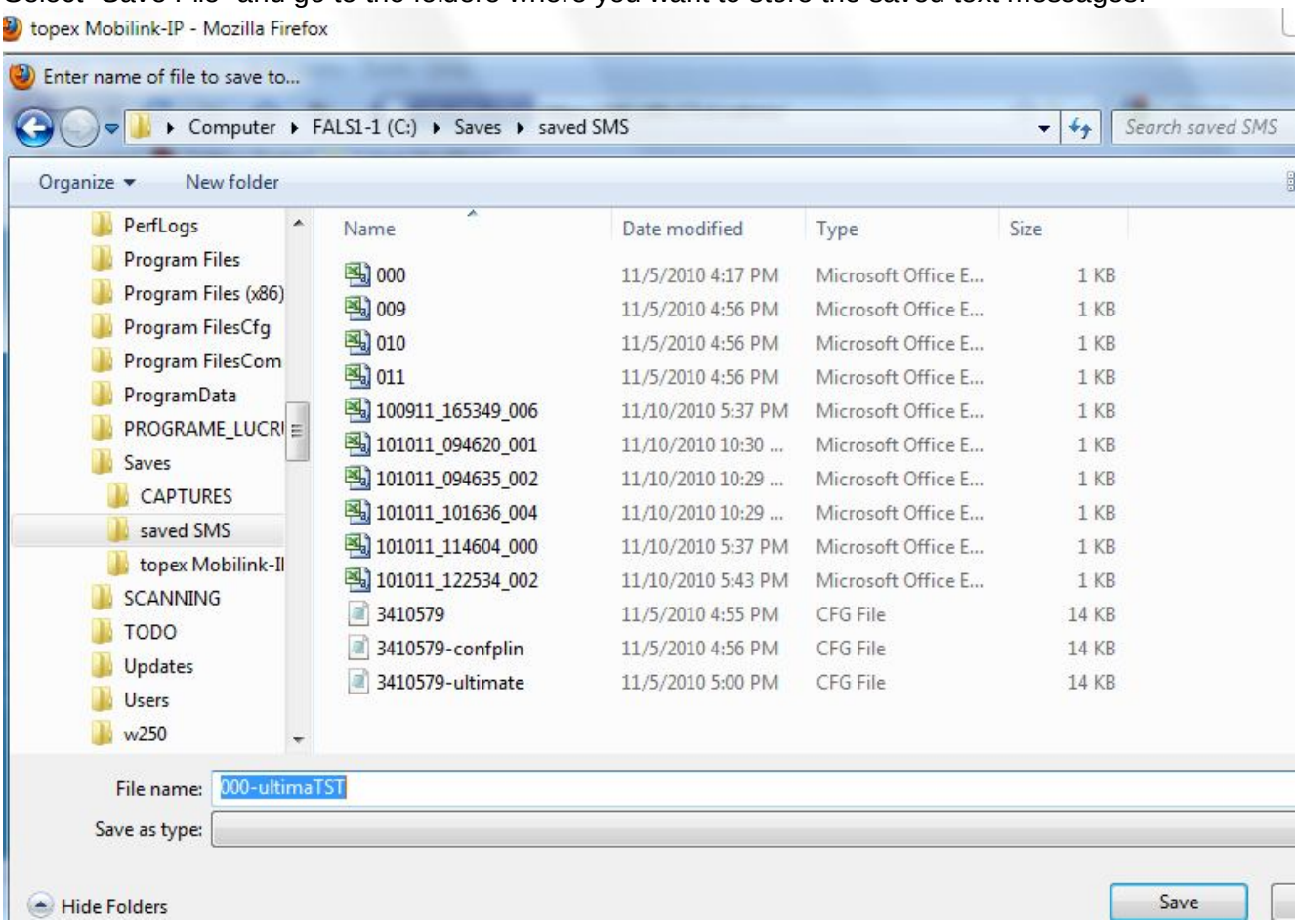


The received messages are shown in this page only <u>when the feature "SMS to E-mail" is disabled</u>. *If it is enabled, the received SMS are sent out as e-mail, and then erased, so you won't be able to see them in the Receive list!*	

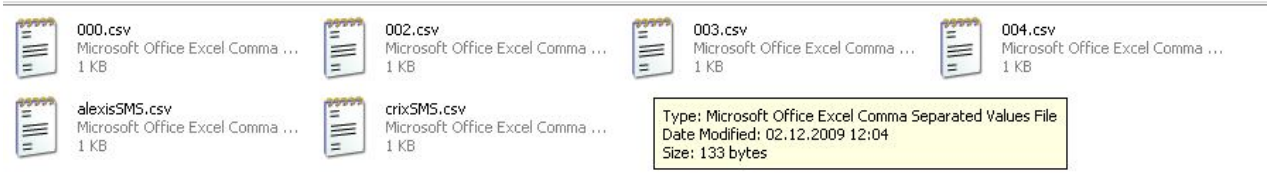
The last column, the field "**Action**", allows you to individually delete or save the SMS messages. Use "<u>Save</u>" to save the respective SMS in a folder of your choice, in format csv.	



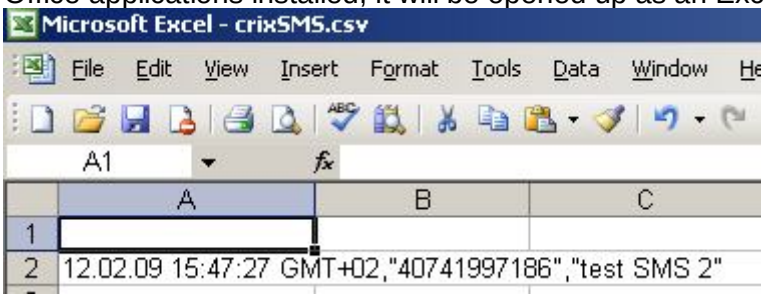
Select “Save File” and go to the foldere where you want to store the saved text messages:



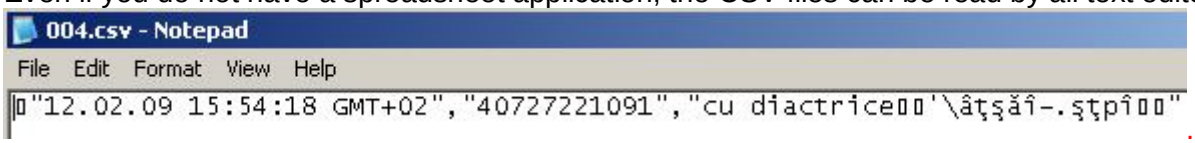
Afterwards, you can go to the respective folder and open up the saved SMS.



The “Comma Separated Values” format is understood by many applications, for instance if you have Office applications installed, it will be opened up as an Excel spreadsheet:

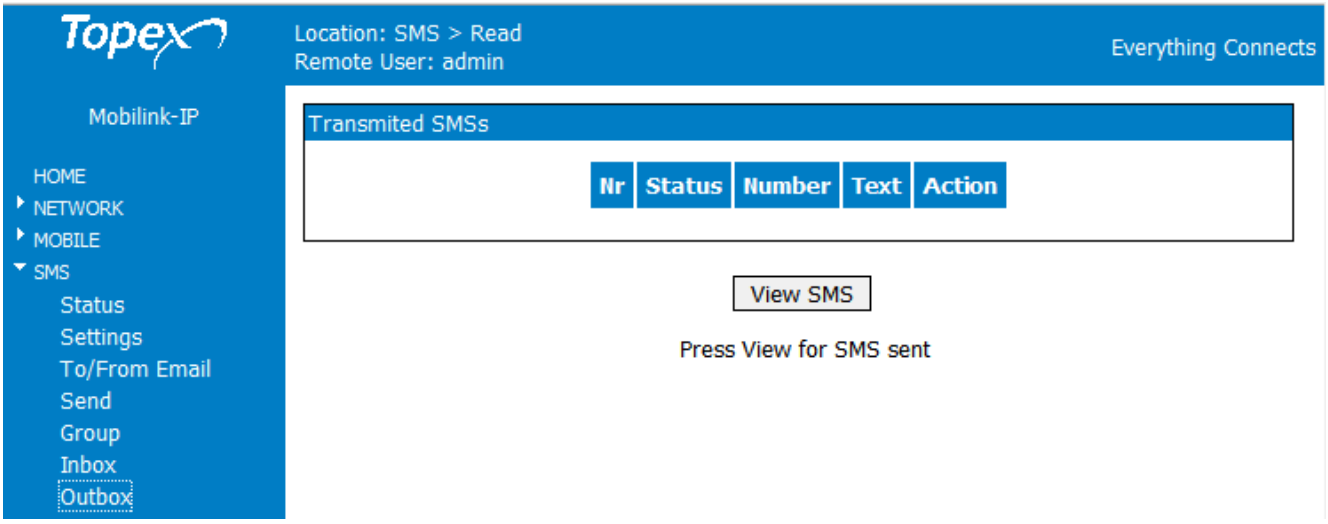


Even if you do not have a spreadsheet application, the CSV files can be read by all text editors:

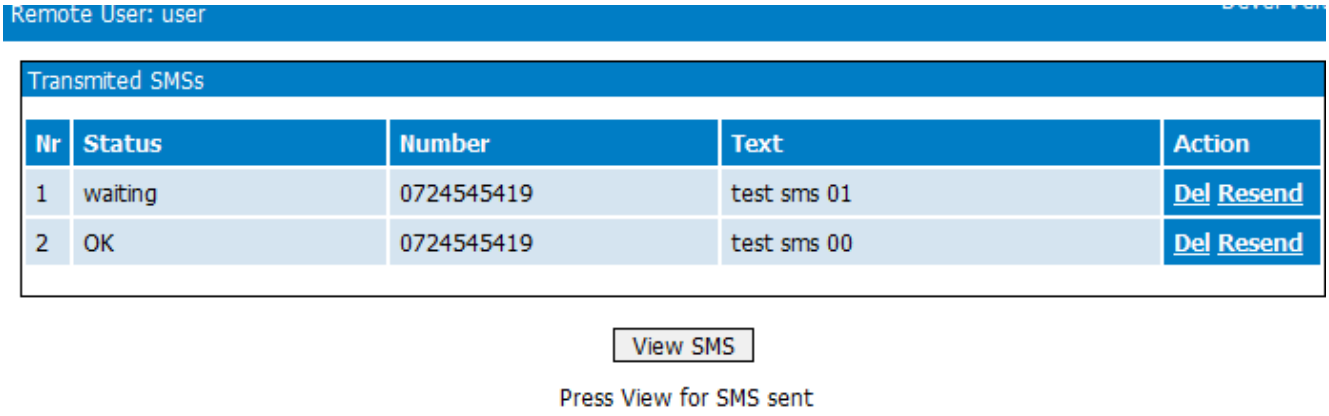


6.5.7 Outbox

Similar to the *Outbox* folder of an e-mail application, shows the SMS messages that must be sent out via MobiLink IP, and their current state:

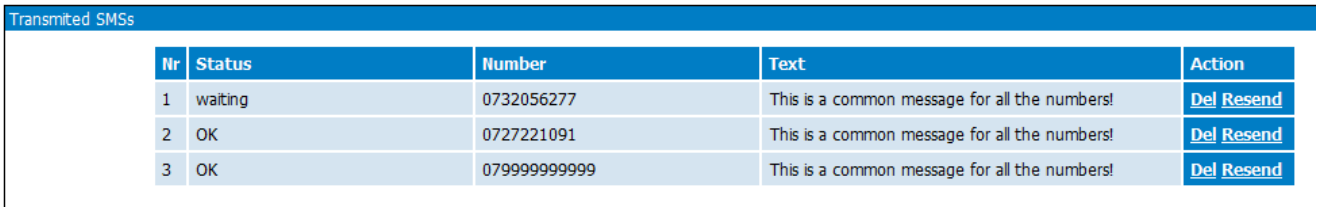


Press the button “View SMS” to see the text messages which are in the Outbox:

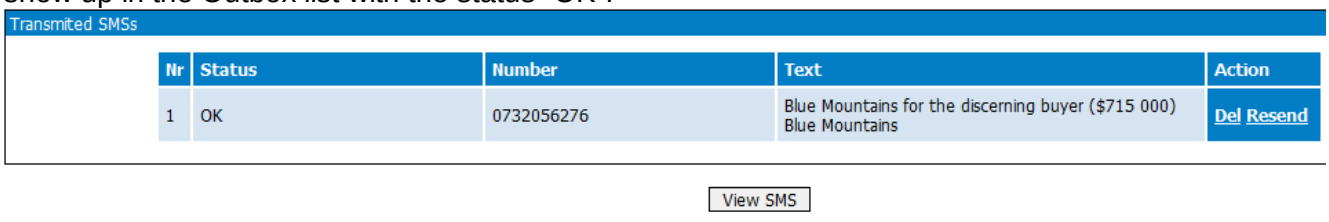


Since the messages are sent out starting with the one at the bottom, it is normal that SMS 2 has already been successfully sent, hence the message “OK”, while SMS 1 is still “waiting” to be transmitted.

In the next example, while sending out a “group” message (same text sent towards three recipients), the SMS has been successfully sent to recipients 2 and 3, while 1 must still wait – his message is in the process of being transmitted:



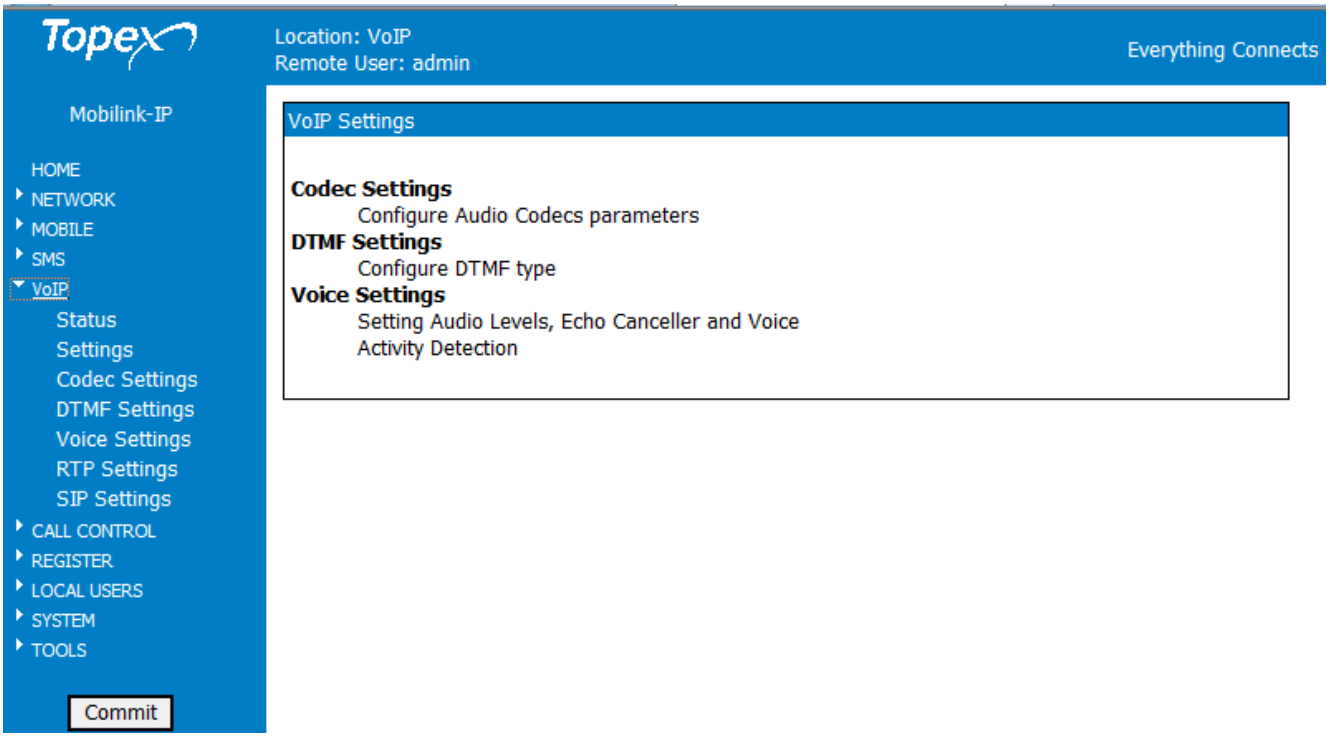
Finally, all the recipients in the list get their “common” message, so they confirm reception and they show up in the Outbox list with the status “OK”:



To the extreme right of the screen, he field **Action** allows you to **Delete** or **Resend** every SMS message that shows up in the Transmitted SMSs list.
In the Outbox of an e-mail client, the e-mail messages are deleted after being successfully transmitted.
Here on MobiLink IP, the sent messages are kept, with the status “OK”, until the next transmission occurs.
Then they are automatically deleted, to make room for the current messages which are waiting to be sent out via SMS service.

6.6 VoIP

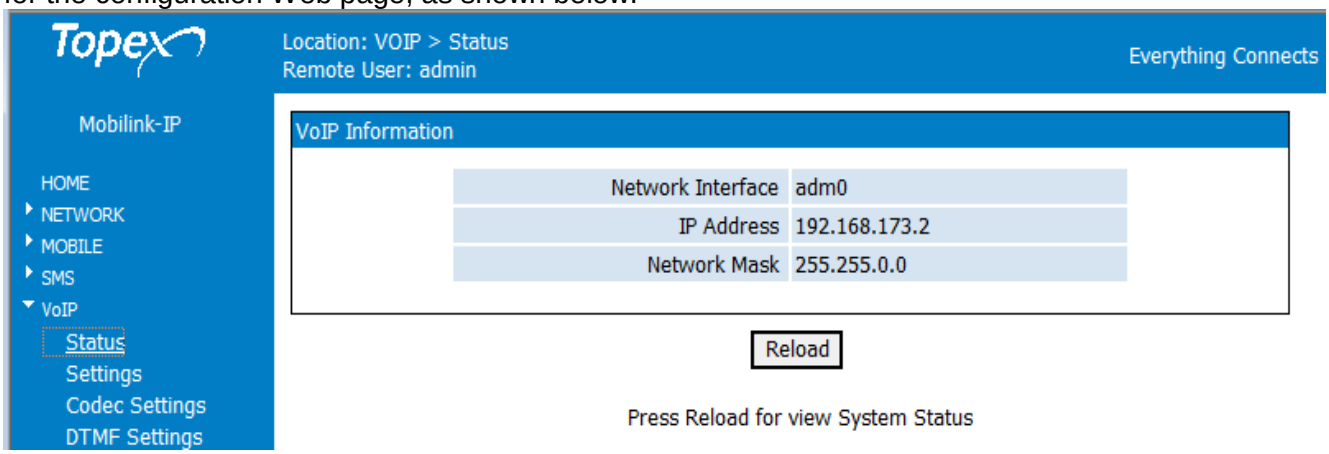
Allows one to configure the settings for Voice over IP aspect of the calls performed via MobiLink, related to the codecs used transmission of DTMF signaling, Voice settings, number of RTP ports used and respectively local port used for SIP.



Currently there are seven sub-pages of settings, respectively Status, Settings, Codec, DTMF, Voice, RTP and SIP:

6.6.1 Status

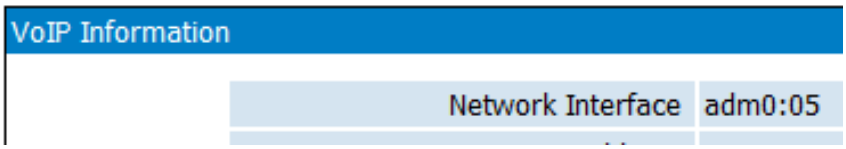
Shows the state of the interface used for VoIP. Usually this is the same as the physical interface used for the configuration Web page, as shown below.



However, logical interfaces (VLAN or aliases) may also be used.

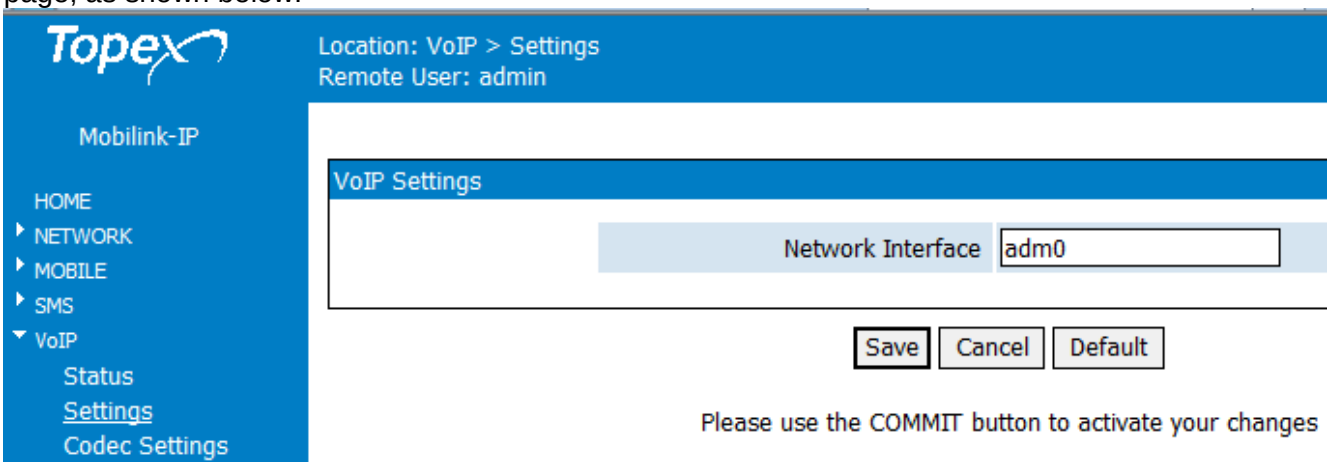


Or:

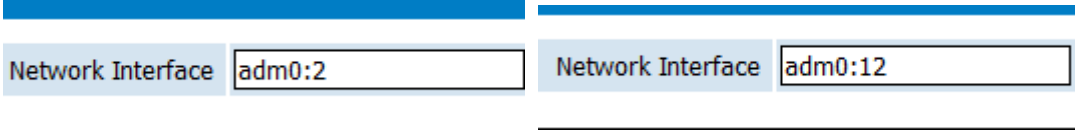


6.6.2 Settings

Here you can select which of the logical interfaces of the equipment shall be used for VoIP. Usually this is the same as the physical interface, **adm0**, which is used for the configuration Web page, as shown below.

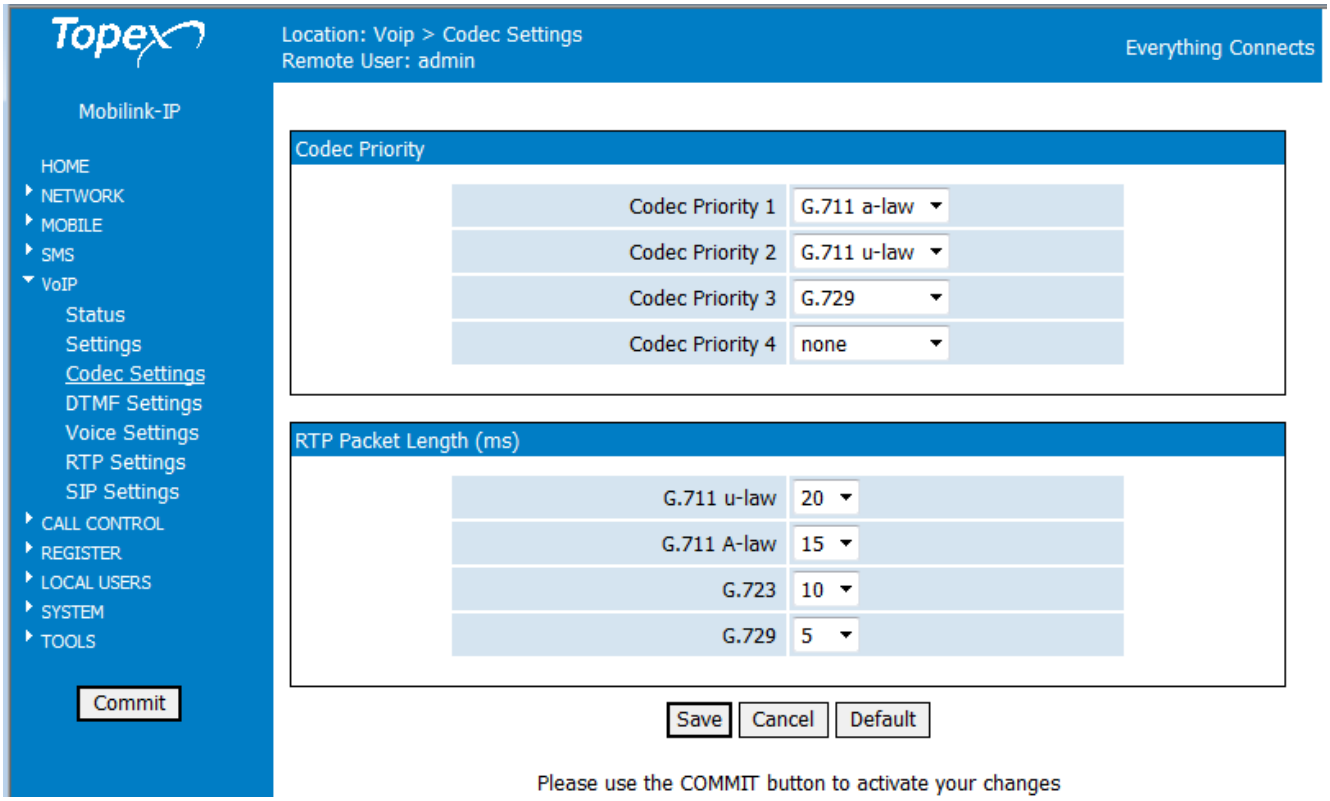


But you may use one of the logical interfaces instead, of the VLAN or the Aliases:



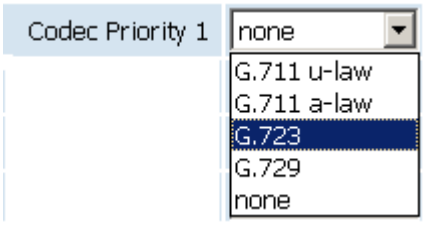
6.6.3 Codec Settings

Settings for the codecs used by the Voice over IP calls:



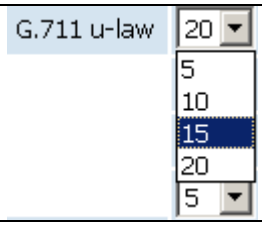
For each of the codecs used, you may set up its priority, and the duration of the RTP packets.

Codec priority

MobiLinkIP supports several audio codecs, currently G.711 (both A-law and u-law), 723 and 729. There are four boxes, with decreasing priorities, from 1 down to 4. For each one, one may assign a codec, or select “none”. Generally one should enter the codec G.711 on the first place, either with A-Law for Europe or u-law for North America, followed by G.729. G.711 provides good voice quality and works well with in-band DTMF.	

If the IP-PBX or the SIP-telephones that will be connected with MobiLinkIP make use of different codecs, one should set the “Codec Propriety” field accordingly.

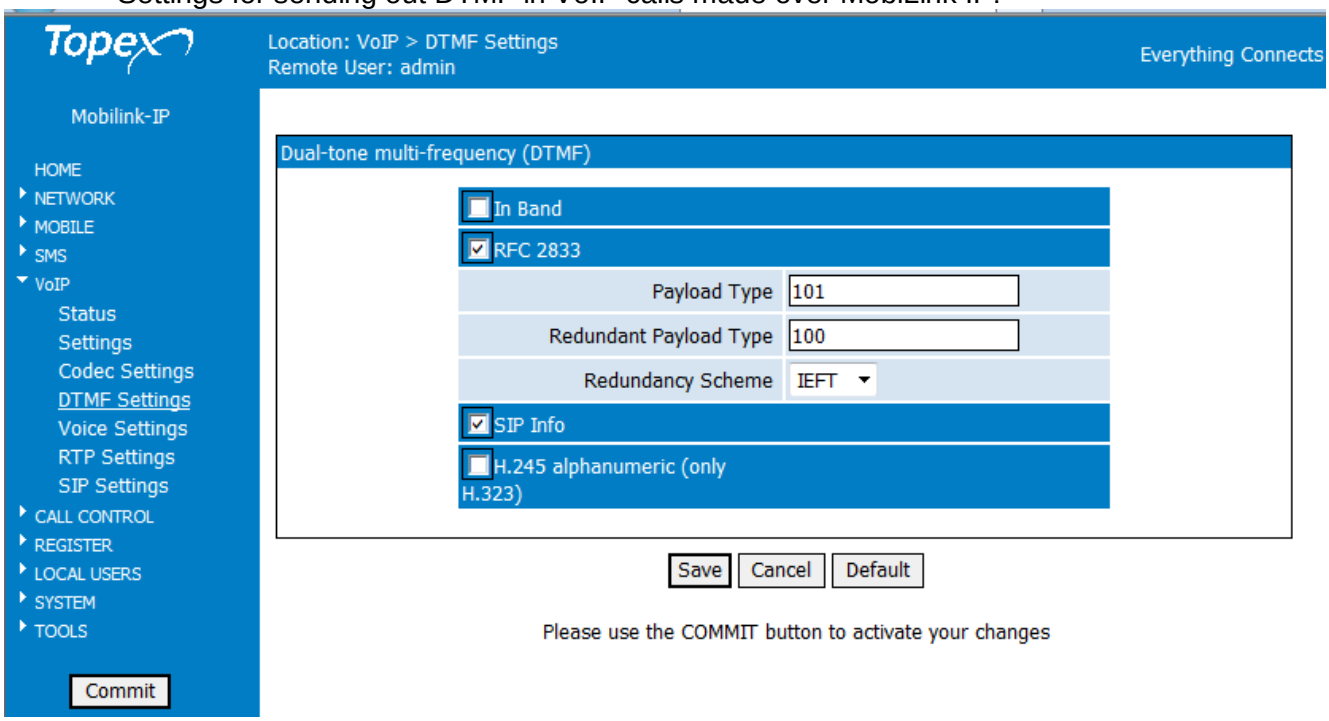
RTP Packet Length

It lets you establish the value for packetization time (in milliseconds) for each codec. It is usually set to 20, but it may be as short as 10 or 5 msec. Increasing the packetization time reduces the packetization overhead, but increases the latency.	

Click Save to save the changes, Cancel to abort, or Default to return to the default settings in the Codecs page.

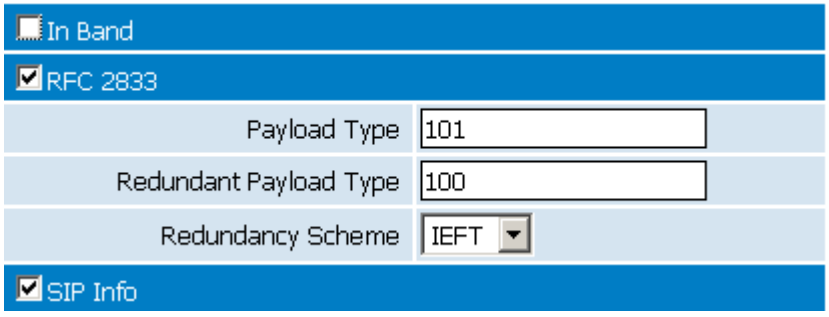
6.6.4 DTMF Settings

Settings for sending out DTMF in VoIP calls made over MobiLink IP:



This configuration area establishes the means of sending out DTMF into the VoIP calls. There are several methods available, which may be used at the same time. Transmission of DTMF signaling can be done in band, out of band in RTP packets, or sending out INFO messages (as digital telephone-events). Additionally, when using the H323 protocol, you can choose to transmit DTMF by using the H.245 Alphanumeric method.

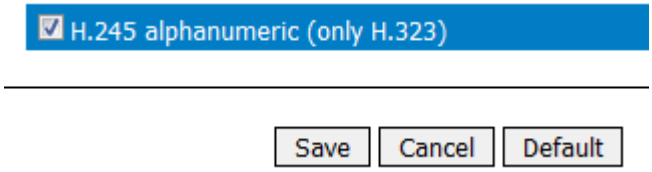
Under the SIP protocol, the INFO method would be used for carrying of mid-call signaling information along the session signaling path (for example to send the DTMF digits generated during a SIP session). Check the box “SIP Info” for this way of transmitting DTMF.



When checking this “RFC 2833” options, also complete the next Parameters fields to the right

- payload type for DTMF in RTP (according to RFC 2833)
- redundancy payload type
- Redundancy scheme: either IETF or AAL2.

When you use H323 protocol for VoIP instead of SIP, you can select the option “H.245 alphanumeric”. The ITU-T H.245 standard specifies several ways of sending out DTMF for the H323 protocol.

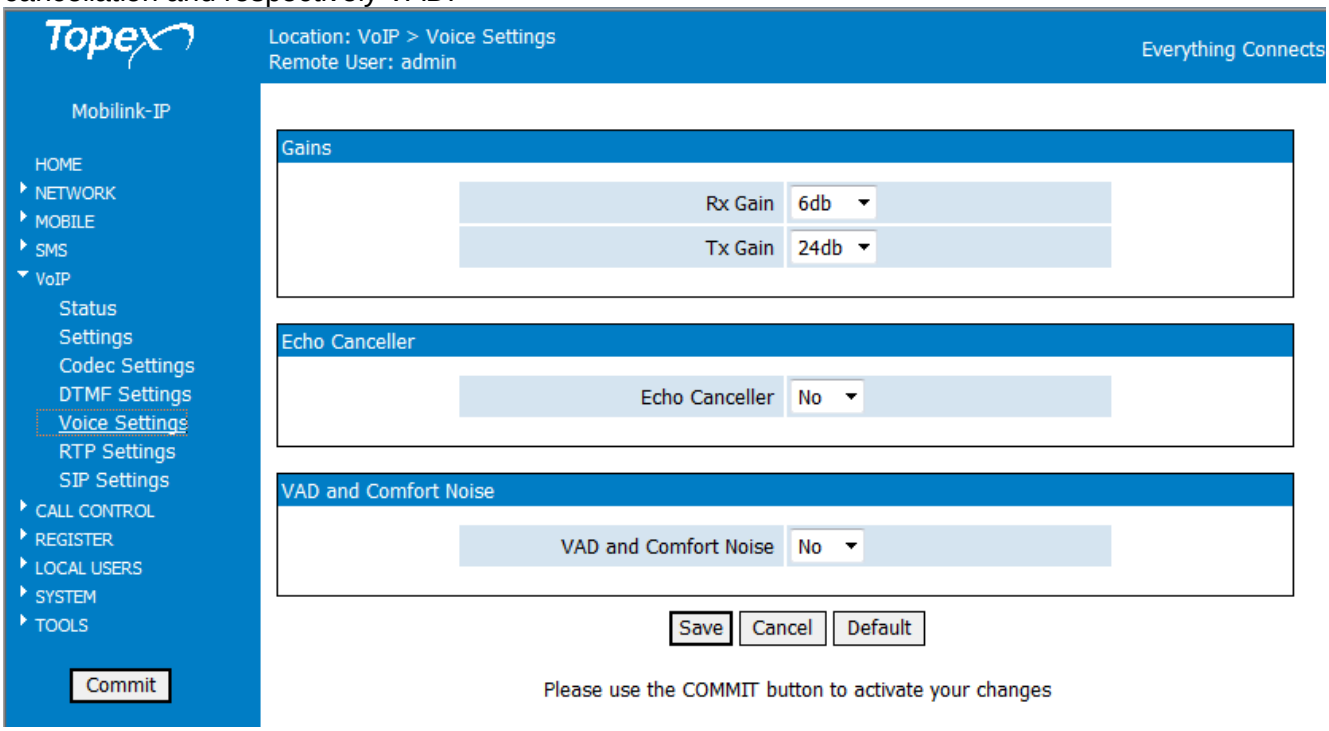


In this case, tones are sent out over the H.245 signaling channel, rather than in-band with voice traffic via RTP channel.

Rohde & Schwarz Topex S.A. has implemented the **alphanumeric version** of the H.245 signal protocol for better compatibility - all H.323 version 2 compliant systems are required to support the "h245-alphanumeric" method, while the support for the "h245-signal" method only optional.

6.6.5 Voice Settings

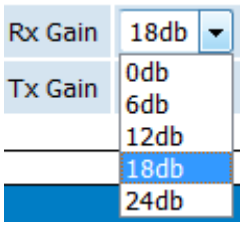
Adjust the parameters on the VoIP side of the MobiLink IP equipment – gain (amplification), echo cancellation and respectively VAD:



Gain

In the same way as for the mobile modules, but for the Voice over IP section, here you can adjust the audio gain for reception and transmission.

Choose Rx or Tx, and form the drop list, select the attenuation you want, from zero dB down to 24dB, in 6 dB increments.



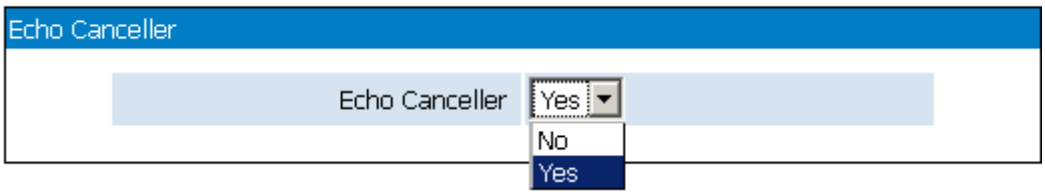
Definition of RX and TX

In this page for VoIP voice Settings, RX is the voice path going out from VoIP towards the mobile network, while TX is the reciprocal voice path, which comes from the mobile network towards VoIP.

The meaning of Tx and respectively Rx are **reversed** compared to the page “Mobile Settings”!

Echo

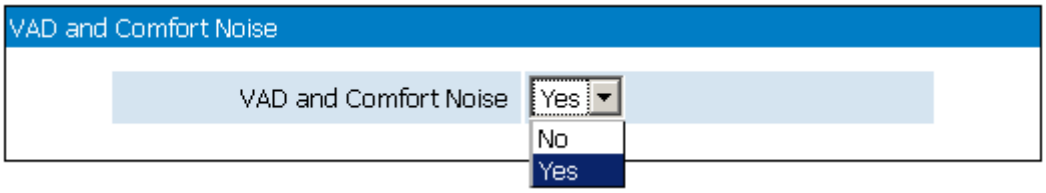
In telephony, “echo cancellation” means reducing or removing echo from a voice communication in order to improve voice quality of the calls. By default it is disabled.



Why the Echo Canceller of MobiLink may be enabled or disabled:

In some circumstances, echo cancellation may be too powerful, or incorrectly applied. In echo cancellation, complex algorithmic procedures are used for computing models of speech. The actual format of the prediction of echoes must be learned by the echo canceller in a process known as adaptation. You must ensure that only one unit in the voice chain performs echo cancellation. If two echo-cancellation systems work in the same voice path, negative effects may arise, such as speech cutting in and out in both directions, and even increased echoes!

Voice VAD
Enables or disables the "Voice Activity Detection", by default this feature is disabled.



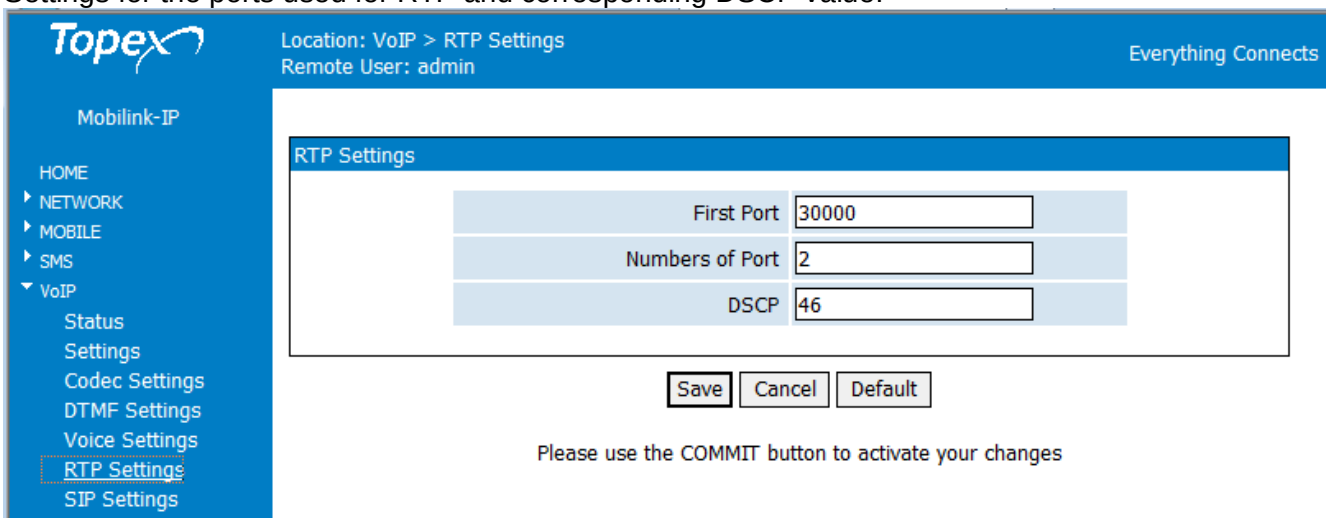
Typical voice conversations can contain up to 35 to 50 percent silence. On VoIP networks, both conversation and silence is packetized. If VAD is enabled, the equipment sends out RTP packets only when voice is detected, thus decreasing bandwidth by 30-50 %.

This way the MobiLink IP will send voice packets only when it has voice input. When it detects silence on RTP, it will send a “silence packet” to the other side which uses less bandwidth and allows to be interpreted for generating comfort noise. This “Comfort noise” is locally generated during the time than no voice RTP packets are sent. Without the comfort noise, the customer will hear only silence on the line, so he may believe that the connection is broken!

VAD may be used advantageously together with echo cancellation - by preventing echo from traveling across a network, the capacity achieved through silence suppression is increased.

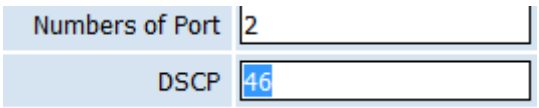
6.6.6 RTP Settings

Settings for the ports used for RTP and corresponding DSCP value:



You can set up the number of the fist port used for RTP, and the number of ports.

With the default settings shown above, ports 30.000 and 30.001 will be used for VoIP traffic.

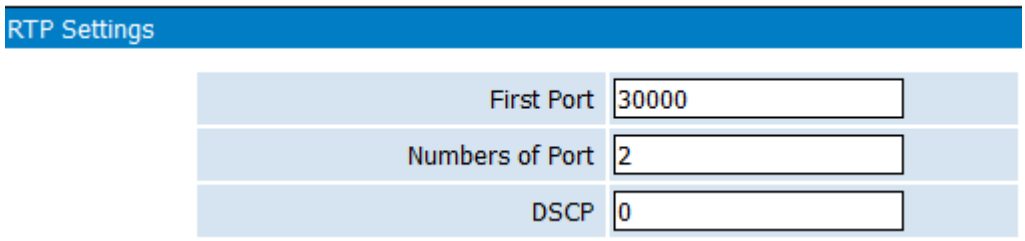


Also, here you may set up the DSCP value for RTP, establishing its priority:

MobiLink IP supports Differentiated Services Code Point (DSCP) marking to configure QoS policies to prioritize certain types of data traffic, such as the VoIP stream.

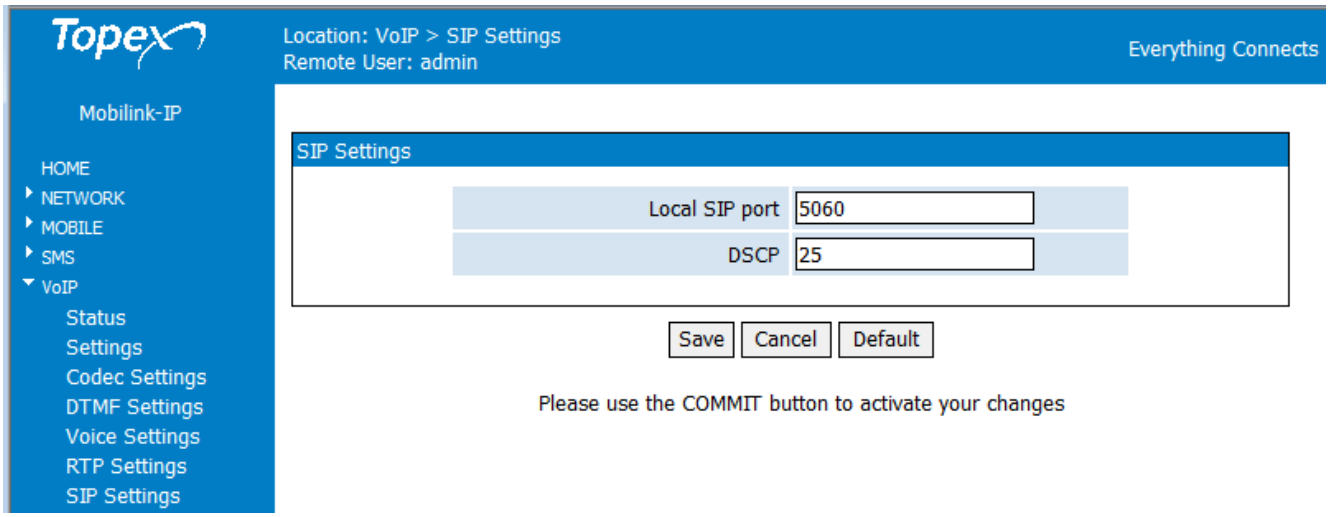
The VoIP data, in this case the Real-Time Transport Protocol is a kind of **Latency-sensitive traffic**, which must be delivered as quickly as possible. Thus, normally, you should assign to it a DSCP value of 46 decimal (0xb8 hexa), known as Expedited Forwarding (EF). This should be the default value for use in MobiLink IP!

When the DSCP value is left to the default zero, this means that differentiated service codes marking will Not be used:



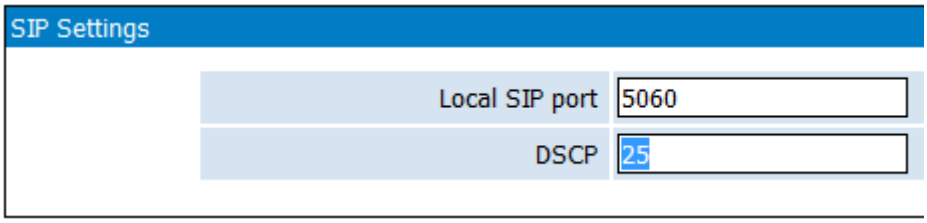
6.6.7 SIP Settings

Settings for the local port used for SIP and the corresponding DSCP value:



By default, the “Local SIP Port” is the usual one, number 5060, but you can change this value, according to the specifications of your VoIP system.
Of course, this local port number must correspond to the port used for SIP by the correspondent (remote) equipment connected to MobiLink IP, which is the SIP phone exchange.

Set up the **DSCP** Value for SIP:

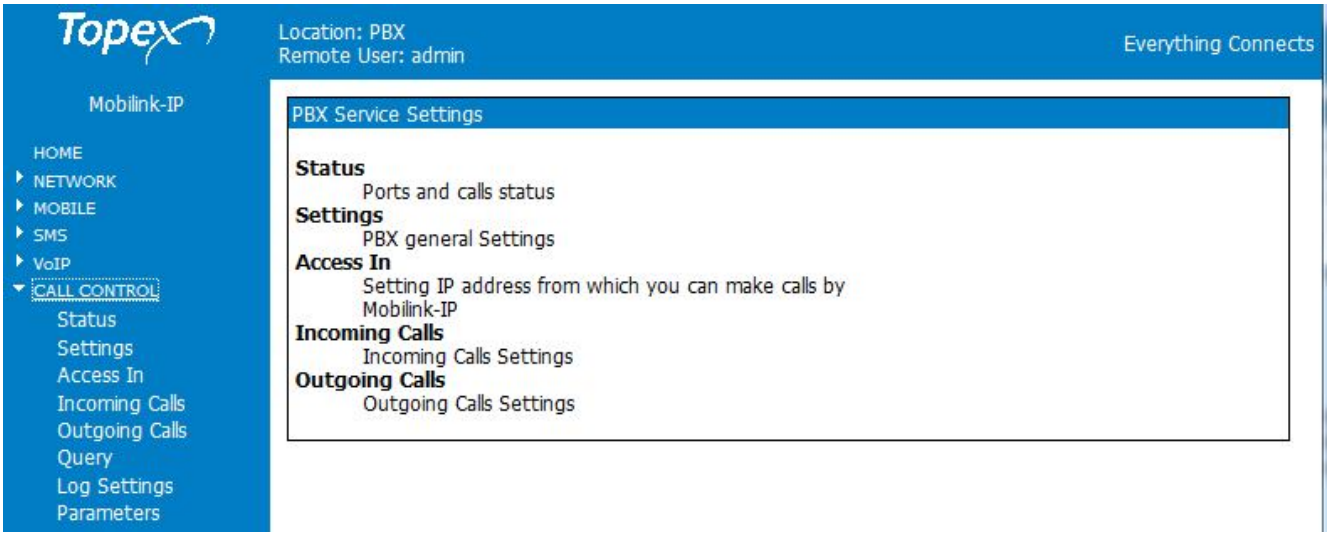


SIP is the control protocol for VoIP. Like all command data it does require only minimal bandwidth, but it should be assigned a high priority because quick transmission can reduce downtime in the event of a hardware failure. You must also use high priority for VoIP control traffic.
Typically, a DSCP values of 25 is used for the SIP control of VoIP traffic.

Here also, when you leave the default value of zero, this means that DSCP packet marking will not be used!

6.7 CALL CONTROL

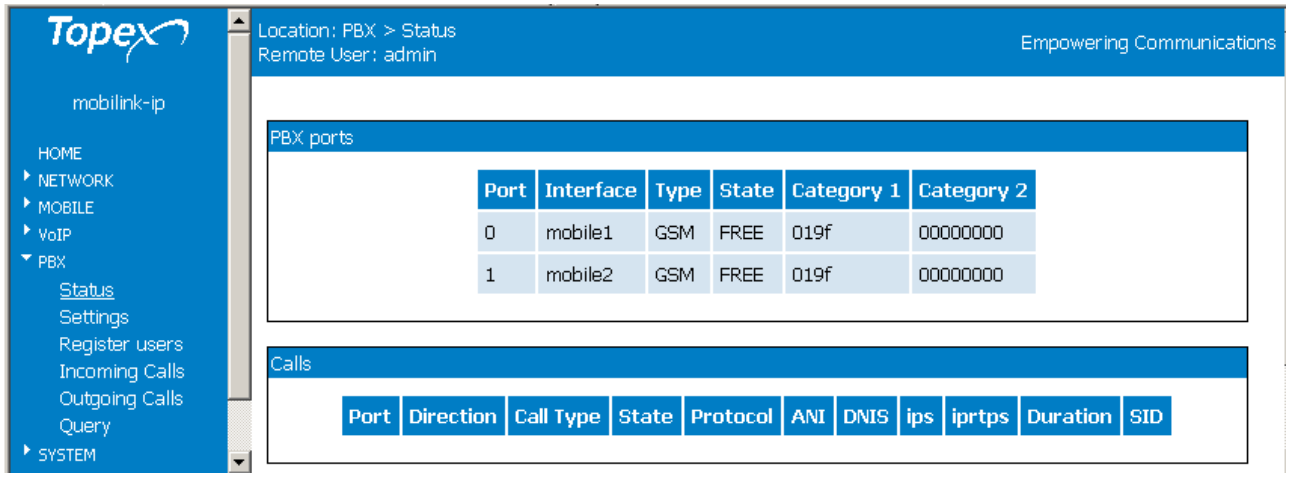
Establishes the settings related to the “telephone exchange” features of the MobiLink IP, which manages all the calls.



This application runs on the MobiLinkIP equipment and performs all the tasks of call-control (management, access, routing, logs and so on).

6.7.1 Status

Displays the current state of the ports of the embedded “phone exchange” as well as the states of the calls:



There are two sections, PBX Ports and respectively Calls.

In the stand-by state shown above, both ports are “free” and no info about calls is displayed, since there are currently no conversations going through the MobiLinkIP.

PBX ports

Shows the state of the two mobile (GSM) interfaces of the equipment, from the point of view of the call control application. They may be FREE (available), BLOCK (blocked for calls) or BUSY (in a call).
Note: The display "BLOCK" means that NOW the respective Mobile interface is not available, but it may have several different reasons:

State
BUSY
BLOCK

State
BUSY
FREE

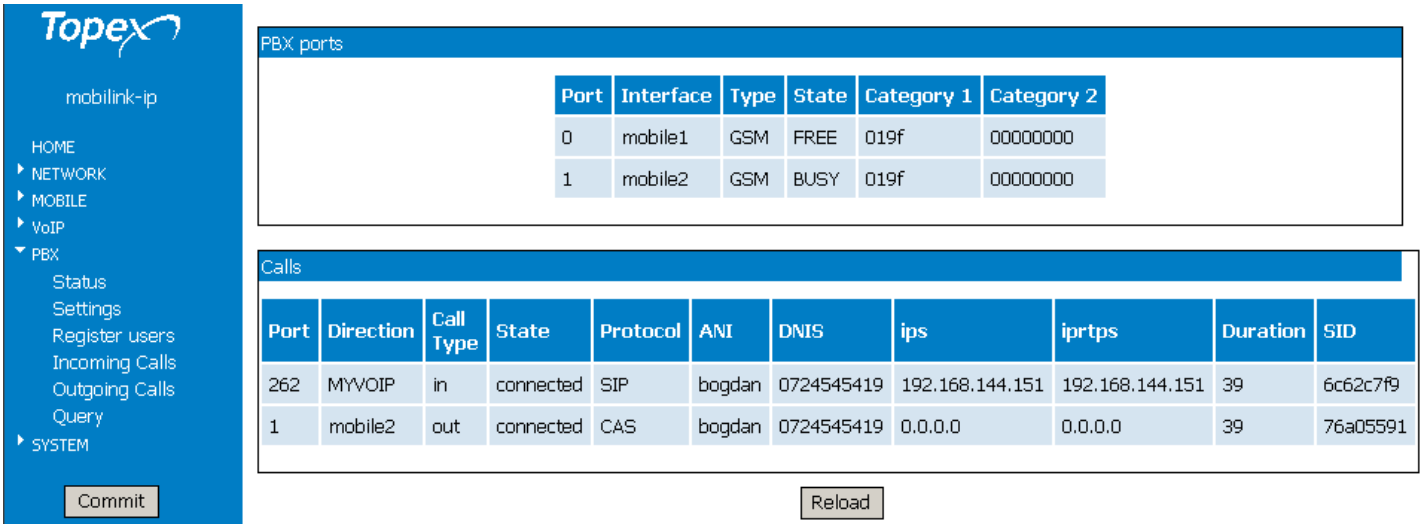
State
FREE
BUSY

The module was disabled from the Web interface, it does not have a good SIM, or simply the device has been rebooted and the respective module is in the initialization or searching phase, and after a delay it may become again available, such as shown below!

Port	Interface	Type	State	Category 1	C
0	mobile1	GSM	BLOCK	019f	0(
1	mobile2	GSM	BLOCK	019f	0(

Calls

Displays info about the calls routed through the MobiLinkIP.



The example above shows a single VoIP call coming from a Soft-phone application running on computer with the IP address "192.168.144.151" in the local network and getting out of the MobiLinkIP through the GSM interface Mobile2. The mobile number called is 0724 …, while the SIP user who calls in "bogdan".

Ports – 1, 2 are the two Mobile ports, while 261, 262 are VoIP ports

Direction – the calls may belong to one of the directions MYVOIP, SIP, mobile1, mobile1, Local user, CALLBT, CALLBA, mobile1_disa, mobile2_disa

Type – type of the call, it may be "in" for incoming or "out" for outgoing.

State – current status of the call, "alerting", "proceed" or "connected"

Protocol – SIP for VoIP, CAS for the mobile networks, or "Unknown"

ANI – identity of the calling party, received by the SIP user. Generally, Automatic Number Identification is a service that provides the receiver of a telephone call with the number of the calling phone.

DNIS – destination number, dialed by the SIP user. Dialed number identification service, also used for the routing of calls based upon the phone number of the destination.

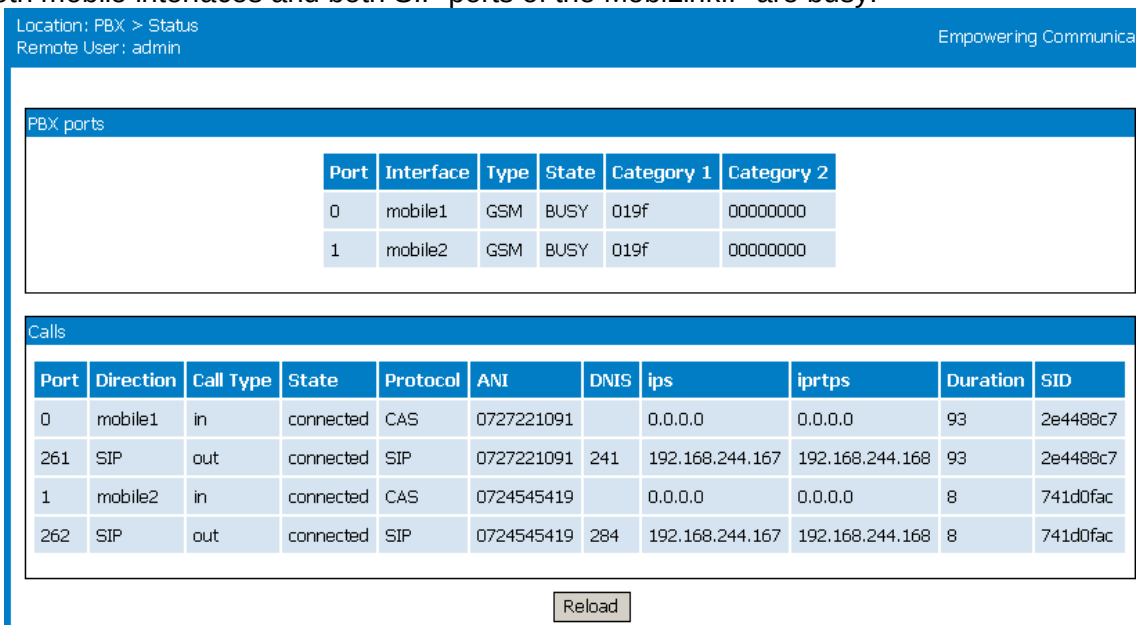
Ips – IP address used for Signaling, SIP, such as 192.168.144.151 in the above example.

Iprtps – IP address for RTP may be the same as the signaling address, or it may be two different addresses. There are examples of both cases.

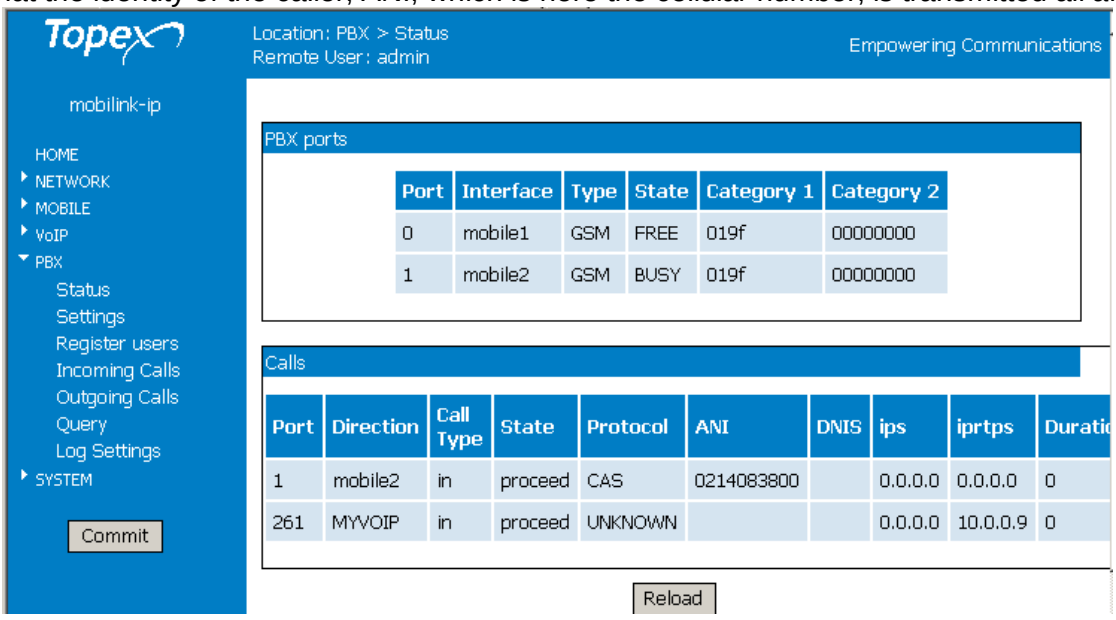
Duration - total duration of the call, in seconds, starting from the moment the called party answers.

SID – Session ID, each session for every call has a unique ID

In the following PBX Status example, a call from "0727…" is getting in through the cellular interface Mobile 1 and goes out as an SIP call through VoIP port 261. Note that in this case the IP destination addresses for signaling and RTP are different! The SIP call goes to the extension 241 of the IP PBX.
Starting one a half minute later, another mobile call comes in via cellular interface Mobile 2 from the mobile number "0724" and goes out as an SIP call, via VoIP port 262, to the extension 284.
Now both mobile interfaces and both SIP ports of the MobiLinkIP are busy.

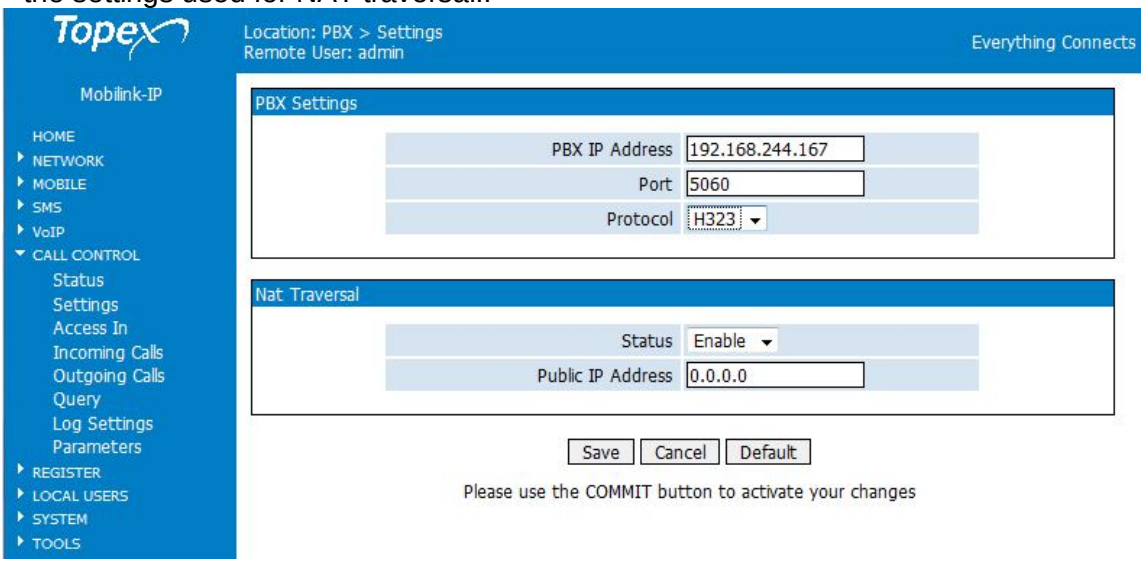


Next the user sees a cellular call routed with DISA function instead of "Target" number, as was done previously. A single incoming call gets in through interface Mobile 1, from the phone number "07245…". It is routed as an intermediate (internal) call with protocol "unknown" on port 262 and gets out as an SIP call on port 261 to the extension that is dialed in DISA mode.
Notice that the identity of the caller, ANI, which is here the cellular number, is transmitted all along:



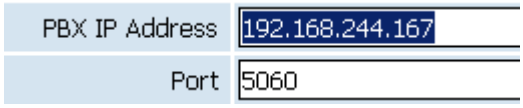
6.7.2 Settings

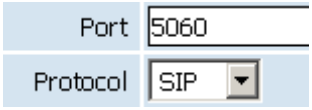
Configure the settings for the IP phone exchange that will work with the MobiLink and also the settings used for NAT traversal..



Select the parameters for the IP phone exchange where the Rohde & Schwarz Topex S.A. VoIP-2-mobile interface is connected: **IP address**, port, and protocol to be used (SIP or H323).

Select the parameters for the IP phone exchange where the Topex MobiLink IP interface is connected: **IP address**, then the port and protocol to be used.





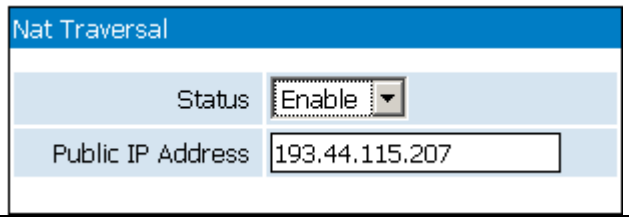
Here you set up the protocol to be used for VoIP and the corresponding port number. By default the port used for SIP protocol is the standard **5060**, but the user may change this value if the SIP PBX operates differently.

Likewise, when you select H323 protocol instead of SIP, the default port number is **1720**, but you can change this setting.



Traversal of NAT:

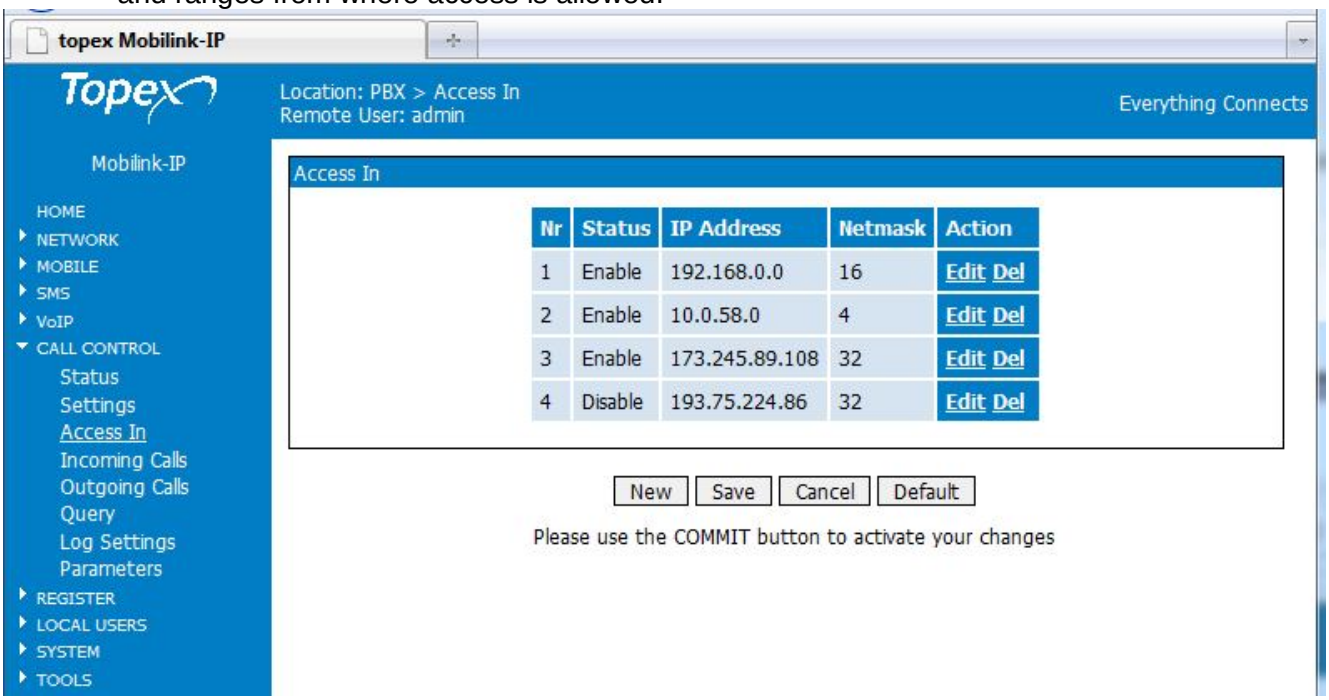
The usage of Network Address Translation was imposed by the limited address space of IPv4.

With NAT, multiple computers on a LAN could share a single public IP address for accessing the Internet. But the use of NAT breaks end-to-end connectivity, which must be restored.	

The techniques for NAT traversal do precisely this, allow communication in client-to-client networking applications, especially peer-to-peer and Voice-over-IP as in the case of MobiLink IP. When you need to use NAT traversal, set it to Enabled and fill in the corresponding public IP address.

6.7.3 Access In

Clears access into the MobiLink IP gateway – this setting establishes the list of IP addresses and ranges from where access is allowed.



Enter the network or host address, then for the Netmask, select it from the drop list which shows up.
Here also, you can create new records, edit and change them, and individually enable or disable each line.



Notes:

- the address of the PBX that you have entered in "**CALL CONTROL>Settings>PBX Settings**" is automatically added into the list Access In.
  So, even if you don't perform any other settings, MobiLink-IP will still be able to talk to the respective IP PBX;

- the first line of the Access In list is set by default to the local network: 192.168.0.0, with net mask 16, meaning that any user with an address type 192.168.xxx.yyy will have access to MobiLink IP;

- the entries in the Access In table must be correlated with the routes defined in the Network page

- the second line refers another local network, from a different class, with netmask 4, much wider .

- the third line refers to an external, public address, where is located a device (such as SJ Phone) that is allowed to call MobiLink IP.
  Usually, this would be single, actual IP address, not a range of addresses, thus its corresponding netmask will be 32 , the most restrictive

- The fourth line also refers to an external address, ad features the subnet mask 32, but is currently disabled (it won't be active).

Examples:

An incorrect setting of the net mask to 24 lets only the final group of figures available for connection :



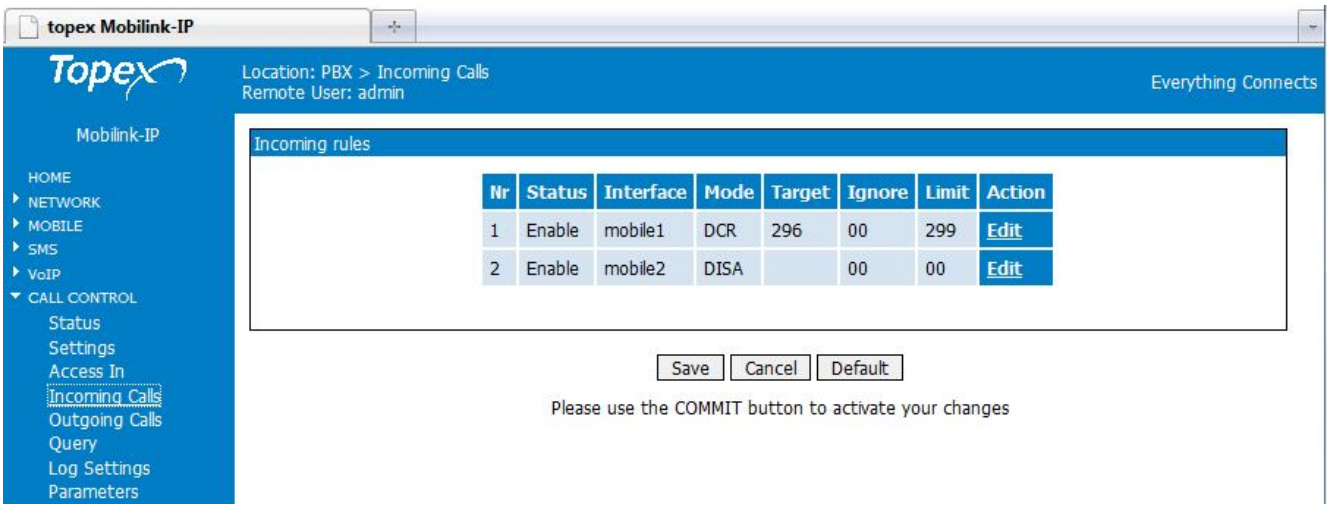
As consequence, the incoming call won't be able to connect, no interface is chosen, and you can see as reason for ending the call "ACL_REJECT":

Nr	Direction	Interface	Date	Time	Call duration	ANI	DNIS	Remote Signaling IP	Remote Signaling port	End cause
1	incoming		01-12-10	09:43:36	000000		0	192.168.173.12	0	ACL_REJECT

This 'ACL_REJECT' is the abbreviation for Access list reject, and it means that the source of call has not been added into your 'access in" table. When you set the correct value for the Netmask (16), the incoming call will be accepted, and a normal phone conversation may take place:

6.7.4 Incoming Calls

Settings for the incoming calls, that means calls which come in through the mobile interfaces of the equipment:



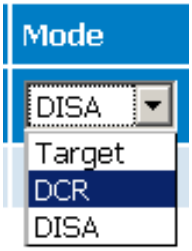
Here there are only two rows that can be edited - it cannot be deleted or more rows added to it. Each row sets the rules for one GMS module – interfaces Mobile 1 and respectively Mobile 2:

Define the rules for calls coming in from the mobile networks.

For each of the two Mobile interfaces one can choose **Enable** to activate it, then select the type (**Like**), **Mode** of routing (action to be taken) and **Target** (destination).

First click **Edit** to start editing the specific row, then **Exit** to get out or **More** to reach additional settings, and finally **Save** the settings:

Mode – how the incoming call will be routed.



Target – directly to the target, a local extension. When you select this, you must also complete the field Target.

DCR – use Dynamic Call Routing (see explanation further on).

DISA – if you choose DISA operation, the value in the field Target doesn't matter any longer, the caller will receive a DISA tone allowing him to dial the number of the local extension he wants to reach. See below the routing of such a call, coming in through interface Mobile1 and being connected to destination by means of DISA dialing.

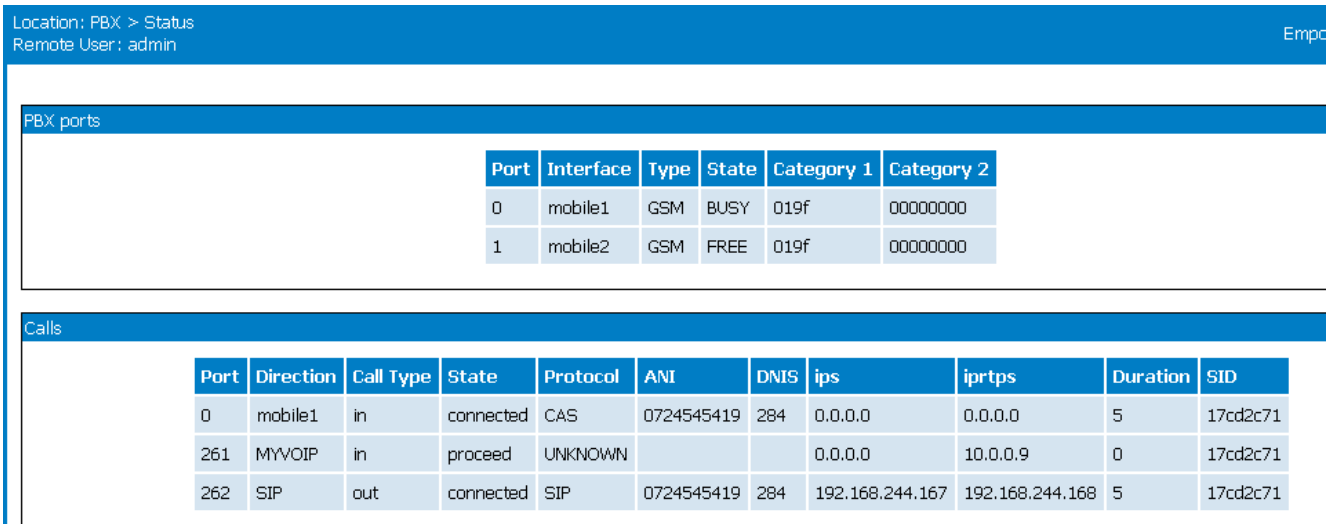
Example of a DISA call.

Port	Direction	Call Type	State	Protocol	ANI	DNIS	ips	iprtps	Duration	SID
32	mobile1_disa	in	proceed	CAS	0214083800		0.0.0.0	0.0.0.0	0	43edc41f

The call getting in through mobile1 interface gets assigned a Direction "mobile1_disa". It receives DISA tone, and gets on as a SIP call with the same ANI as the initial call.

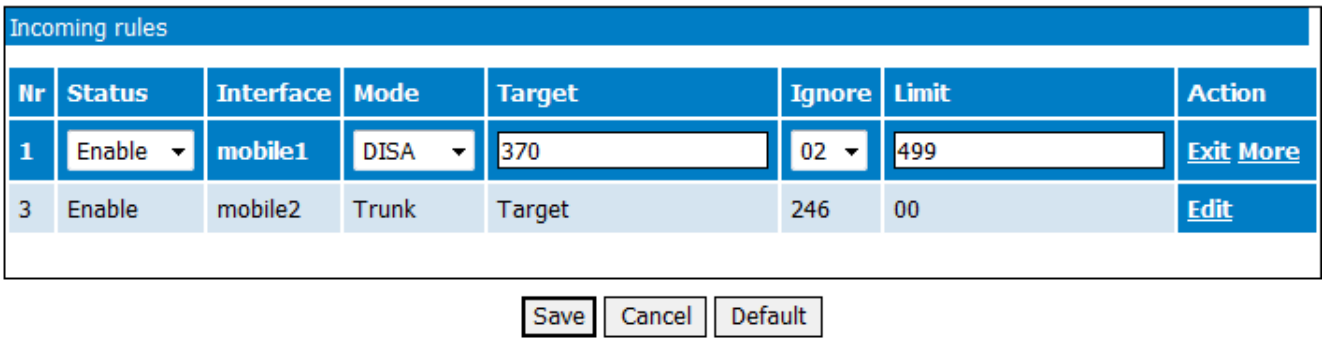
Port	Direction	Call Type	State	Protocol	ANI	DNIS	ips	iprtps	Duration	SID
0	mobile1	in	connected	CAS	0724545419	284	0.0.0.0	0.0.0.0	5	17cd2c71
261	MYVOIP	in	proceed	UNKNOWN			0.0.0.0	10.0.0.9	0	17cd2c71
262	SIP	out	connected	SIP	0724545419	284	192.168.244.167	192.168.244.168	5	17cd2c71

Routing an incoming call with DISA makes use of an intermediate call with "unknown" protocol, which is internal to the equipment:



Warning: *Be careful when using the button "More"!*

The Web interface for Incoming Calls features the button More (when you edit a row, it shows up in the extreme right, besides Exit).



The pages for Local Users/Mobile Users, allow only **certain** mobile numbers to register to the PBX
But here, in the section for Incoming Calls, all the mobile phones that call to the modules of MobiLink IP will be registered to the PBX (instead of registering only the numbers that you have inserted in the table!)

6.7.5. Definition of DCR

Dynamic call routing is *the process of automatically re-routing a call based on specific criteria, instead of using a static, pre-defined routing table*.

The feature Dynamic Call routing was designed primary to fix the ID issue that arises for calls made through mobile gateways; from your desk, you ring someone in the filed, but this mobile user cannot call you back!
From First, the called party cannot see the real phone number (extension) of the calling party; instead he just sees the number of the SIM card for the GSM module used. When the call is not accepted, or the called party was busy, when the called party tries to ring back to the number that shows up in „missed calls", he will reach only the respective GSM module of the MobiLink-IP gateway and he cannot be connected to the PBX or to the human operator.
He does not have information about the **real number** of the calling party, he does not know from what local extension he was called.

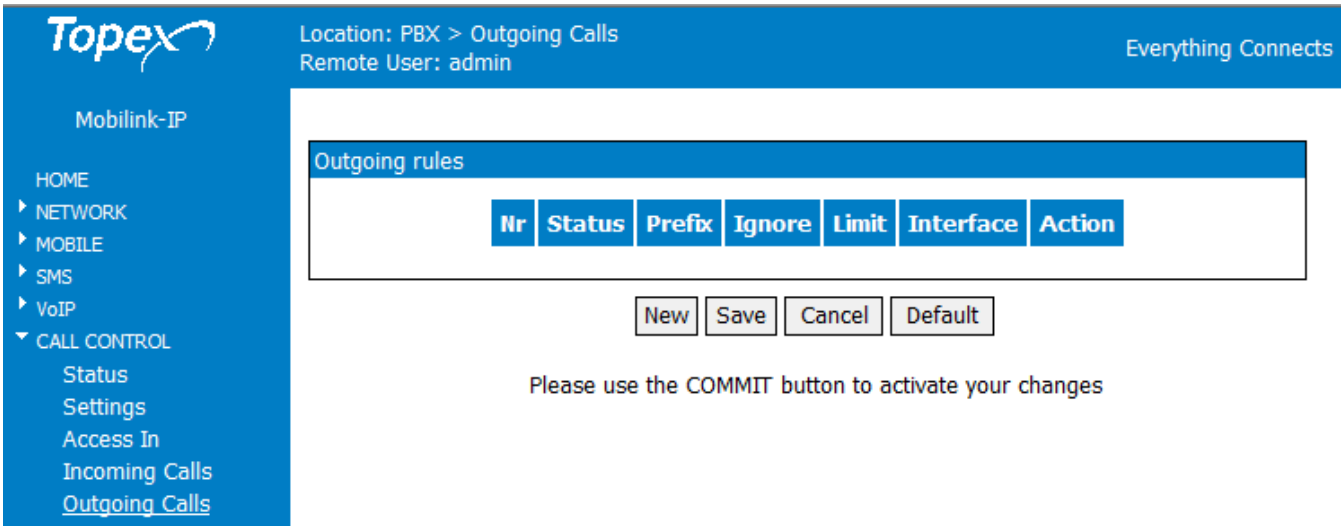
To overcome this problem, outgoing calls made through the mobile modules of the MobiLink IP are stored in the Dynamic CLIP table as they are made.
When the destination rings back, he will be connected automatically to the source of the call. See below an example:

Nr	Direction	Interface	Date	Time	Call duration	ANI	DNIS	Remote Signaling IP	Remote
6	outgoing	mobile3	26-11-10	14:00:44	000005	246	0724545419	192.168.244.167	5060
7	incoming	CALLBT	26-11-10	14:01:05	000006	0724545419	0	192.168.244.167	0

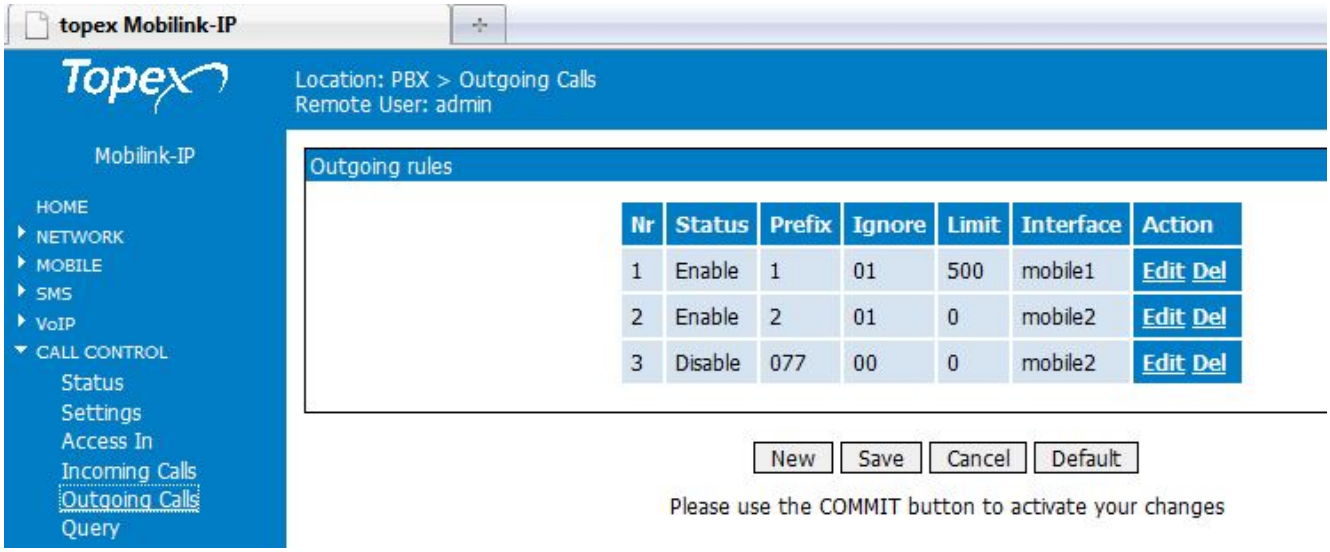
At 14:00:44, the extension 246 rings, via interface mobile3, the phone number 072xxxxxxx – row 6 is an outgoing call.
The, at 14:01:55, the user in the field, with phone number 072xxxxxxx calls back.
Row 7 shows an incoming call. His call is automatically connected to the extension 246, who was the source of the first call. But in the field DNIS you see only a zero, not the value "246". Why?
Because it is a dynamic list! The value of the destination is stored only **temporary**, then it is deleted or replaced with a new value. This way, when the user in the field calls back the first time, he will be connected to the source extension, but when he calls back a second time or later, this value has been erased, so now he will be connected to the extension that was specified in the filed "Target"!
Also, when the mobile user out in the field has not yet been called by anybody from MobiLink IP, the DCR feature has not value to operate upon, so when he rings, the remote mobile user will be connected to the extension you have set in the field "Target".

6.7.6 Outgoing Calls

This section establishes the rules for outgoing calls, which are calls coming from SIP and directed to mobile networks:



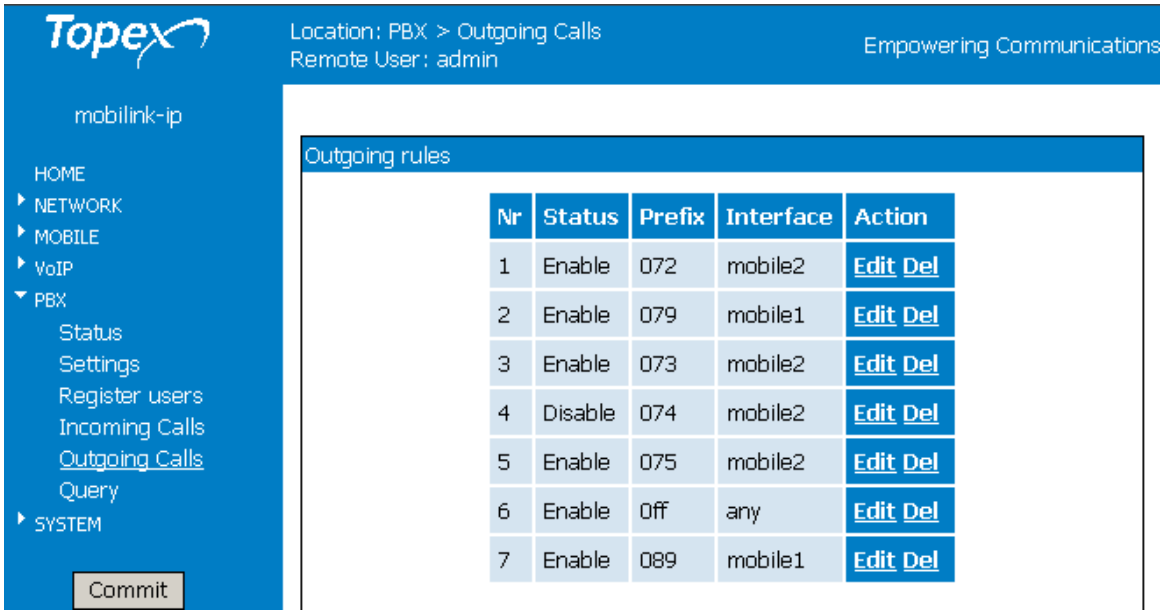
As you can see in the image above, at fist this list is empty, so you must create new rules and edit them as suited to your routing needs:



One can define a table with several rules for calls coming in from SIP and going out through the mobile interfaces.
Each rule may be individually enabled or disabled. The program analyses the numbering (the prefix) of the phone number called and routes them accordingly through one of the mobile interfaces.
If one of the mobile ports is disabled, the respective GSM module will NOT be used for outgoing calls.
Use the **New** button to create a new rule, **Edit** to fill the parameters for it, **Exit** to get out of the respective row, and **Save** to save the rules created.

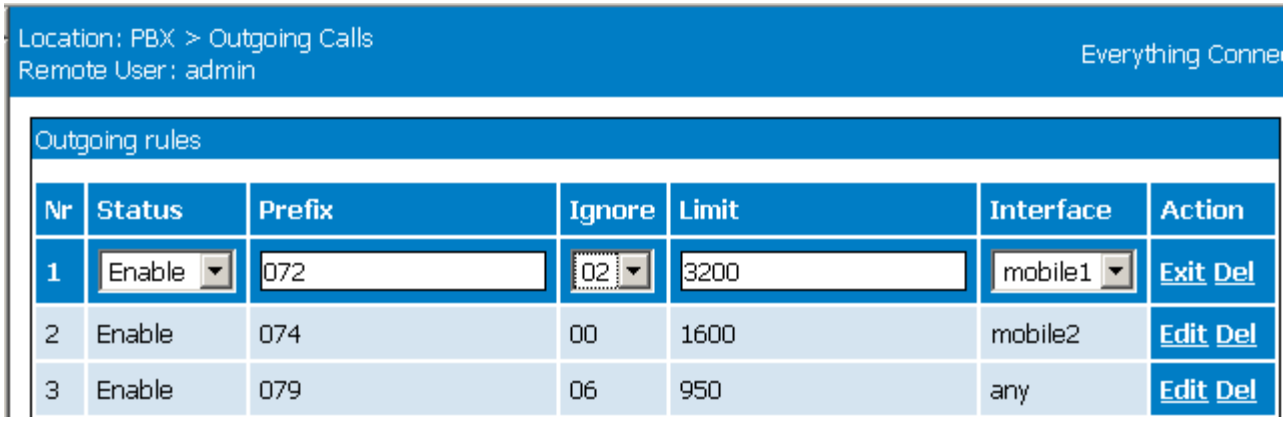
The button **Del** is to erase an existing rule from the table.

Example:

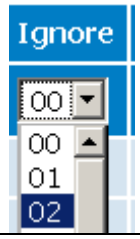


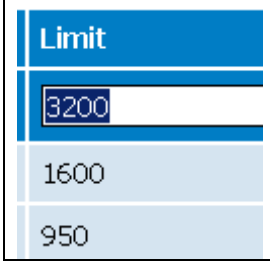
If the call has the prefix 072, it will go out through the interface Mobile2, if it has the prefix 079, it will go out through the interface Mobile1, and so on.
The prefix “0ff” means zero followed by two digits (no matter which ones), one must use this format for compatibility – all the prefixes in the table must have the same number of digits.
The value “any” in the field “Interface” means that the respective call can be routed via any of the two modules.

Ignore and Limit



The field Ignore and respectively Limit have exactly the same significance as for the incoming calls

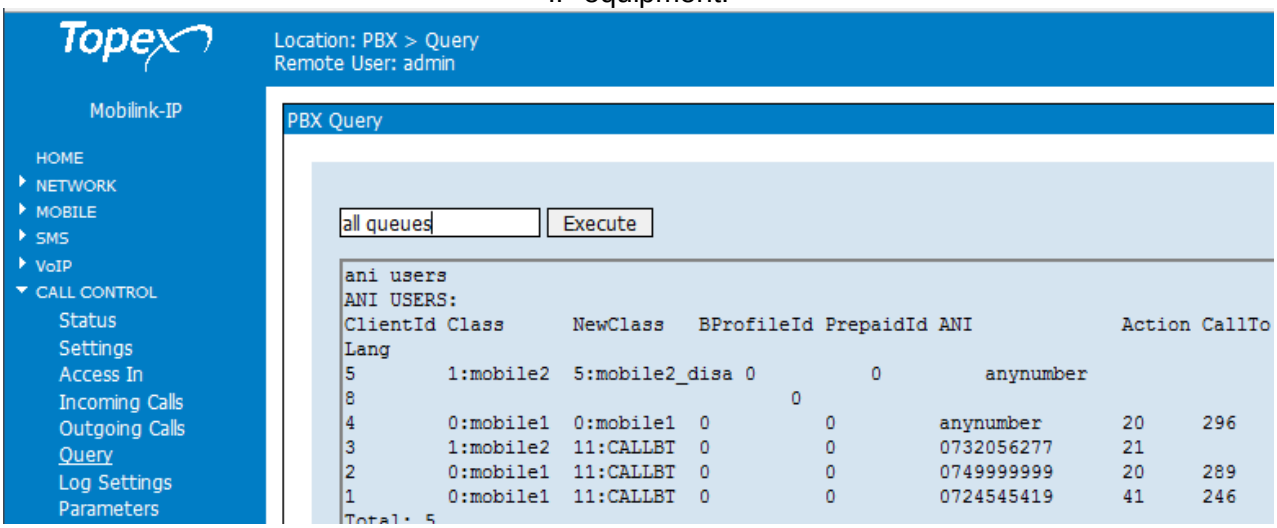
	You can set the device to ignore the first 00 … 15 digits out of the phone number. This is to be used together with special rules for routing of the outgoing calls – for instance, the local subscribers must dial a '6' to get access to the public telephony networks, and the pbx application must be told to ignore the first digit of the telephone number.

	You can establish a time limit (in seconds) for the duration of outgoing calls, such as 3200 seconds in this example. Such limitation is especially useful when, following a phone conversation, the local subscriber does not hung up, and the call could remain connected, unnecessary generating a very high phone bill for the respective SIM.

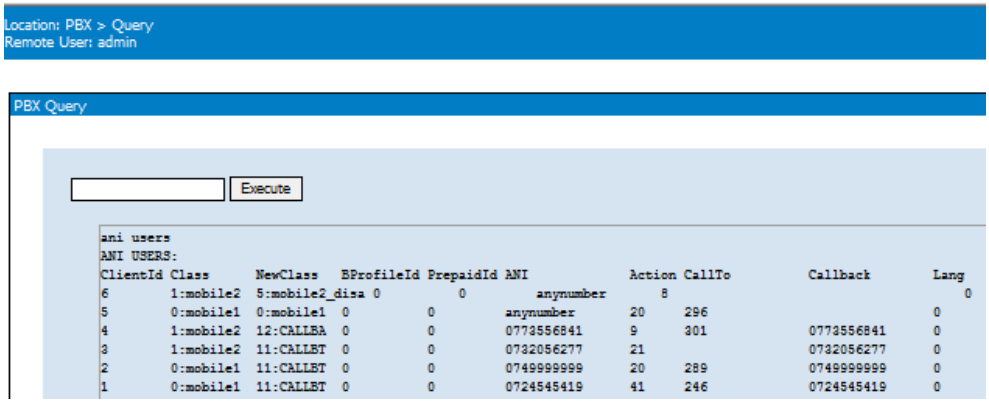
Use **Save** and then **Commit** to make your changes persistent!

6.7.6 PBX Query

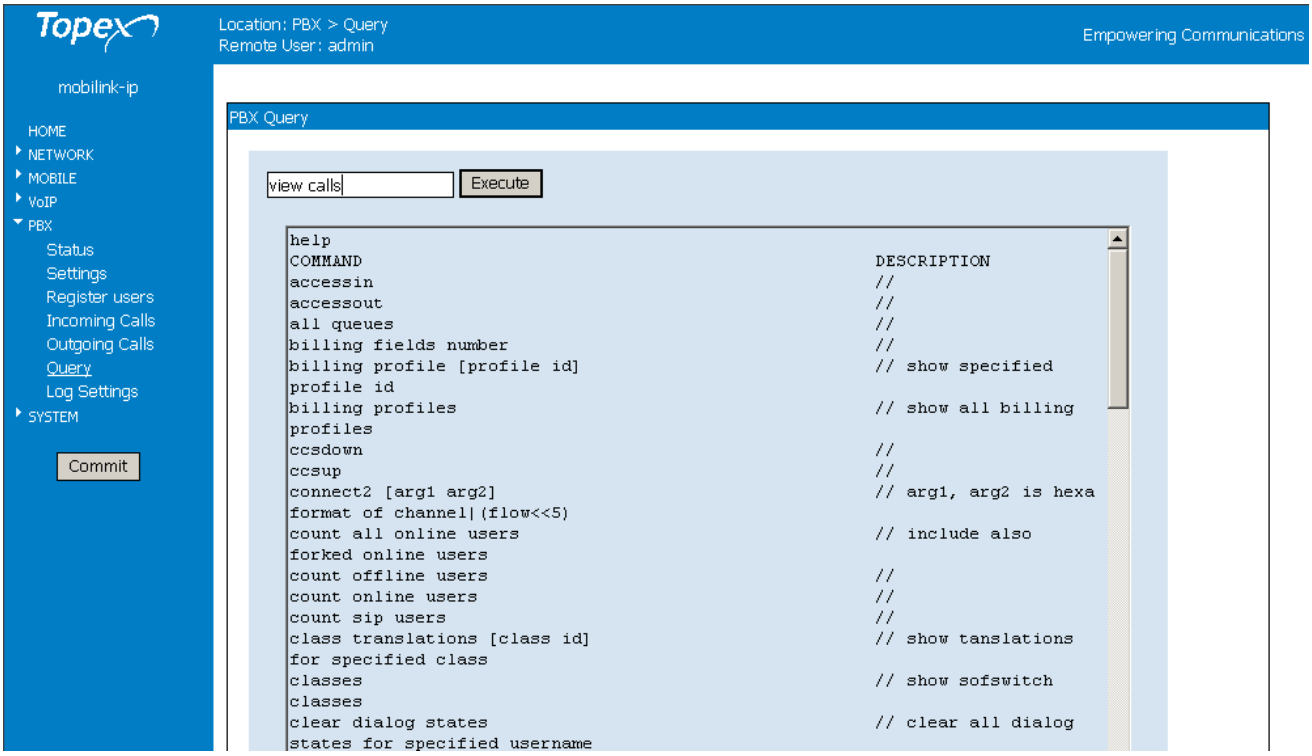
Allows the sending of text commands to the phone exchange application which runs on the MobiLink IP equipment.



When you press the button Execute, the PBX application executes the command and displays the answer below, as shown in the above example.



The command “help” shows you all available commands:

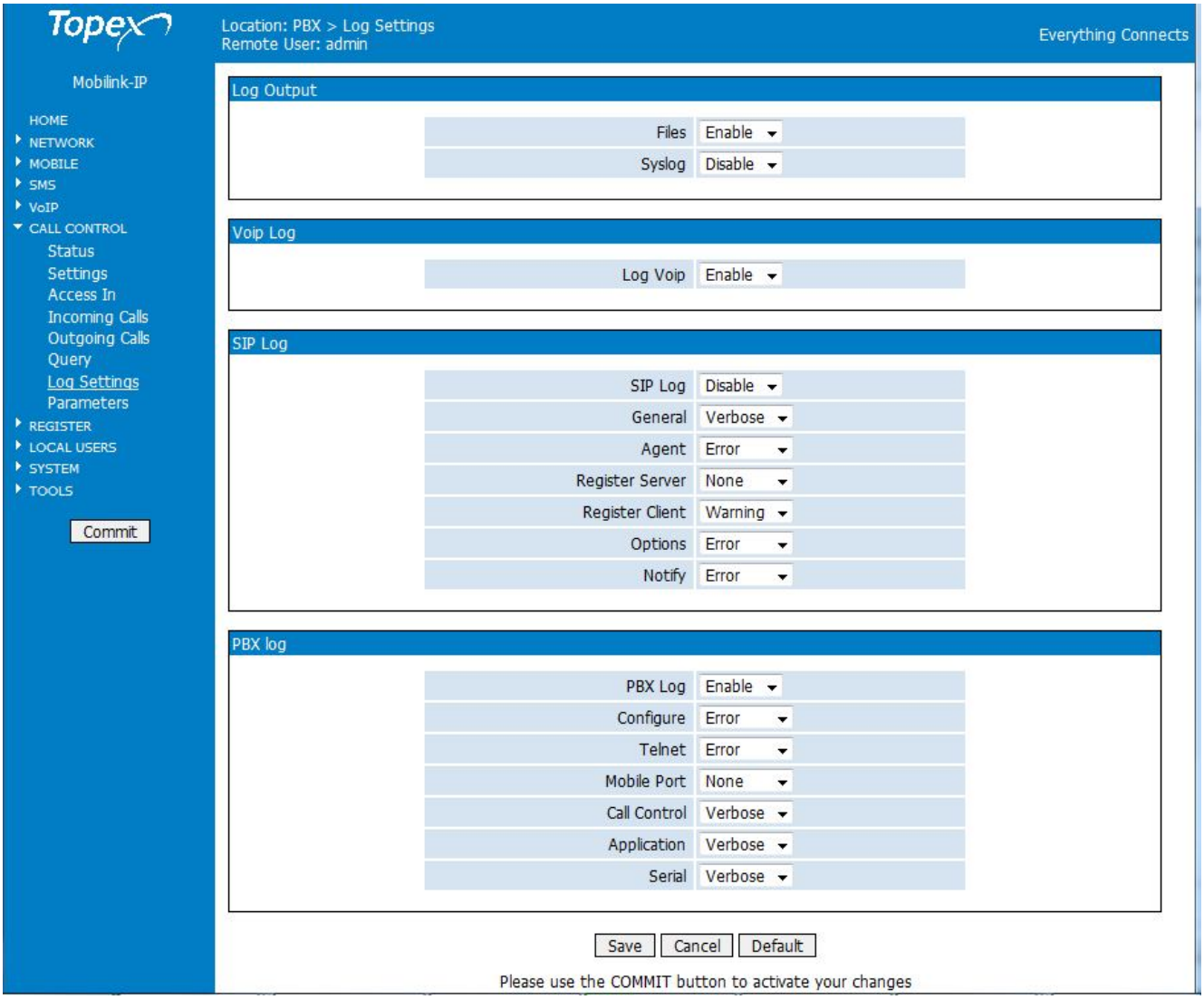


Further on:

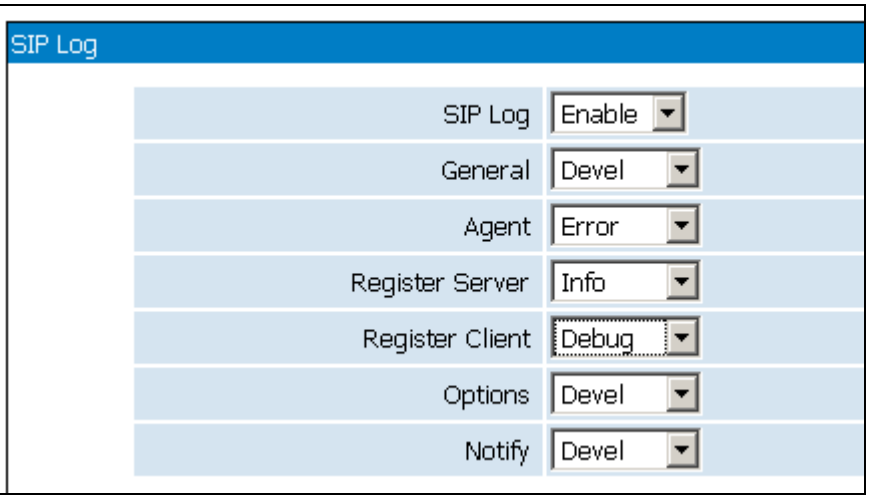
```
transactions client                                  // show number of free/busy SIP client transactions
tls sock [fd]                                        // show details for specified TCP/TLS socket
ts sock busy                                         // show TCP/TCP sockets from busy queue
ts sock free                                         // show TCP/TLS sockets from free queue
ts sock wait                                         // show TCP/TLS sockets from time wait queue
update config                                        // update (reload) config from database into memory
view allports                                        // show all ports
view calls                                           //
view cicstate                                        //
view class [classid]                                 // view details for specified class id
view classes                                         // view classes list
view cardstate                                       //
view dirasr                                          //
view dircounters                                     //
view groups                                          // view groups info
view linkstate                                       //
view mind server                                     //
view pools                                           // show client pools info
view ports                                           // show installed ports with state != FREE
view port [port_number]                              // show specified port
view portsoncard [card_number]                       // show all ports on specified card
view portstate                                       //
view portstateEONES                                  //
view proxycalls                                      //
view route [routeid]                                 // view details for specified route id
view routes                                          // view routes list
view routestate                                      //
view simstate                                        //
view simtelnet                                       //
web callback [A username] [B username] [A class id]  // call A then call B and connect both
xconnect [port1 port2]                               //
```

6.7.7 Log Settings

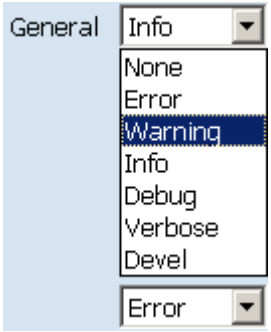
Here one can set up for each section of the log how much information will be stored.



Currently, the sections available for the log are: Voice over IP (a single item), SIP and respectively PBX.

Currently, the sections available for the log are: **Log Output**, **Voice over IP** (a single item), **SIP** , and respectively **PBX** (call control) with many selectable items.	

In each section there are one or several items, and for each of these items you may choose the level of details of the log form the drop list that shows up: None, Error, Info, Warning, Debug, Devel, Verbose and so on.



Some items have only on/off setting –you may only enable or disable logging, but fir other you can choose exactly the level of details recorded into the log of the MobiLink IP equipment.

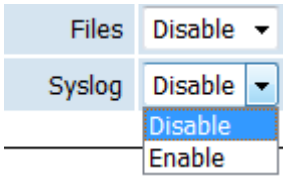


"None" or "Disable" means no log at all is created for the respective element, "Error" is the minimal level (only errors will be logged), while "Devel" is the maximum details setting – everything is logged, for the usage of developers.

These settings generate correspondingly more or less detailed log files, from this minimal system log:

```
Jan  1 00:00:12 syslog: config.c: CONFIG_TYPE_LOGIC dbg_bitmap = yes
Jan  1 00:00:12 syslog: config.c: Port comcen 9677
Jan  1 00:00:12 bytmspd: bytmspd.c: *** bytmspd run! ***
Jan  1 00:00:12 bytmspd: slotvin.c: init slotvin nr=2
Jan  1 00:00:12 bytmspd: chipvin.c: Init chip vinetic &bytvin[0]=0x10015300
Jan  1 00:00:12 bytmspd: chipvin.c: Open Device /dev/vin10
Jan  1 00:00:12 bytmspd: slotvin.c: Open Device /dev/vin11
Jan  1 00:00:12 bytmspd: slotvin.c: Open Device /dev/vin12
Jan  1 00:00:12 bytmspd: chipvin.c: vinit.pram_size=71598
Jan  1 00:00:12 bytmspd: chipvin.c: vinit.dram_size=14850
Jan  1 00:00:12 bytmspd: chipvin.c: vinit.cram_size=0
Jan  1 00:00:12 kernel: reg_buffer_pool_get is called
Jan  1 00:00:12 kernel: reg_callback_bufferpool_get, handle 80B26240
Jan  1 00:00:12 kernel: QOS init at highlevel.
```

Log Output (by default both options are disabled)

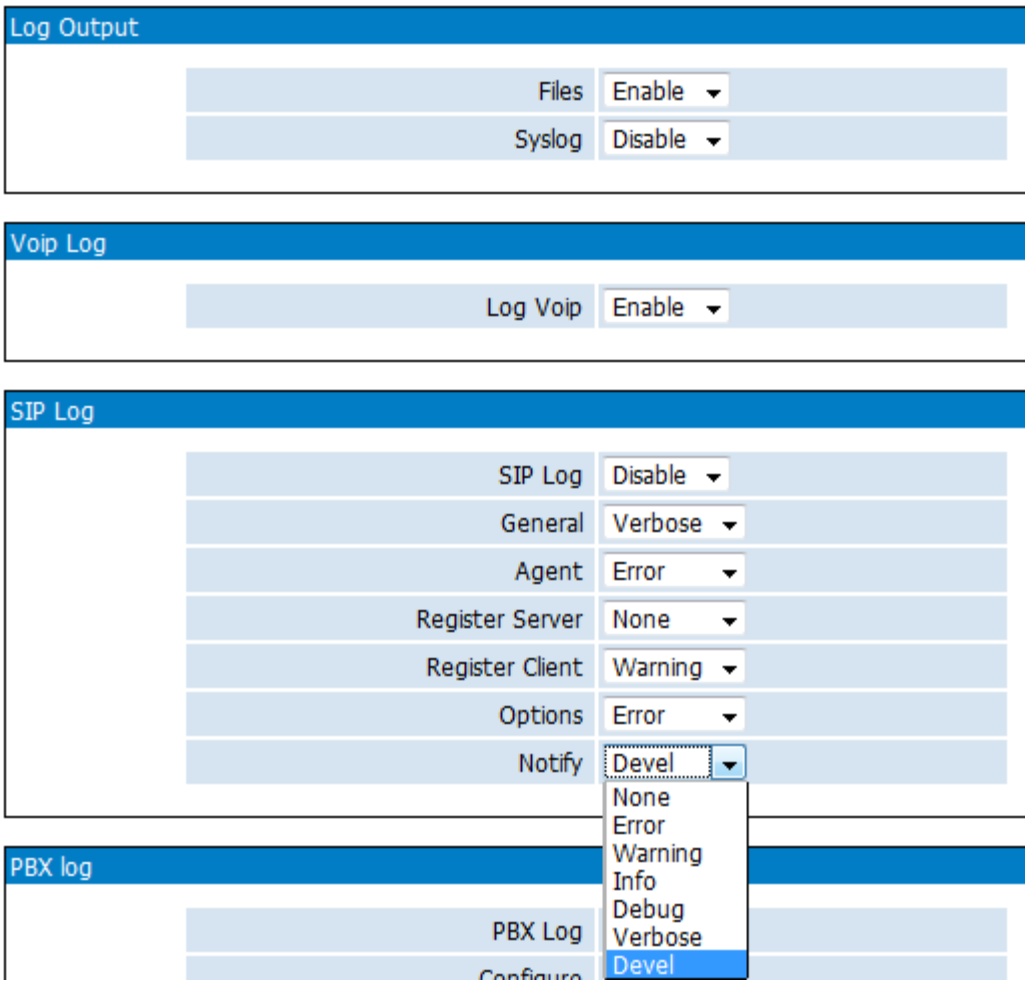


Files –when you enable this, the logging information is also sent to output files in the Out directory of the files stem. This can be done only on MobiLink-IP equipments that are fitted with additional non-volatile storage (internal USB stick or external USB storage devices).
Syslog – when you enable this, the logging information is sent to the Syslog, where you can see and save it.

When Files is enabled, the log files created will be available for analysis in the "out" directory of the filesystem, where they are permanently stored:

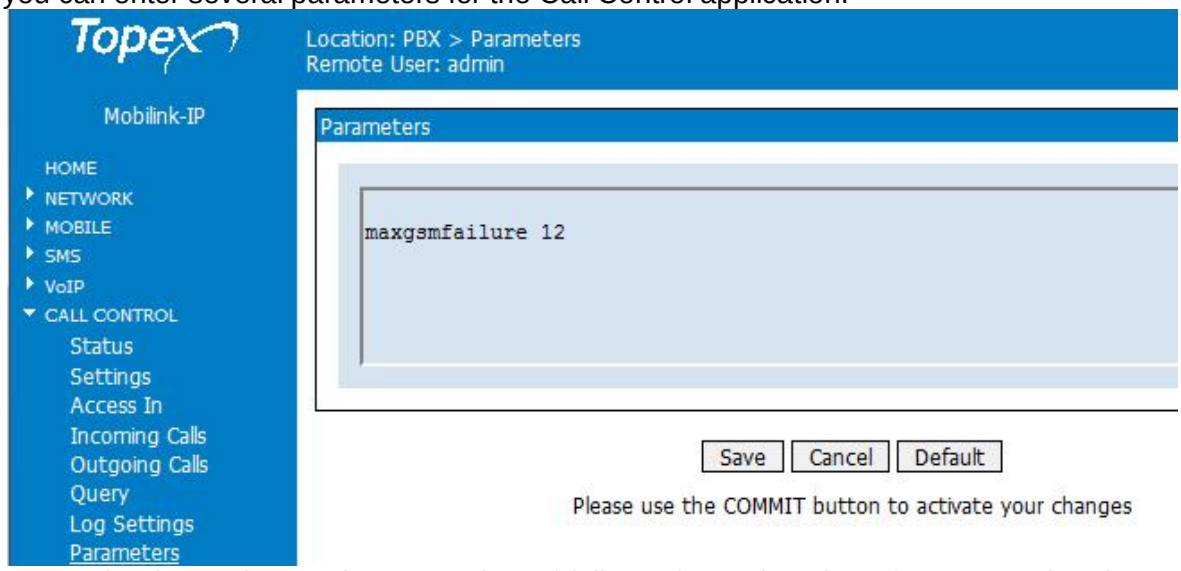
```
admin@192.168.173.2's password:
/tmp $ cd ..
/ $ ls -a
.           dev         lost+found  out         sbin        usr
..          etc         mnt         proc        sda1        var
bin         lib         opt         root        tmp         vinetic
/ $ cd out
/out $ ls -a
.           ..          capture     lost+found  topvin.log
/out $ ls -a
```

For each section and sub-section of the log, you should choose the level of details most adequate for your operation (None, Error only, Verbose, or even more detailed, Devel, for developers only!)



6.7.8. Parameters

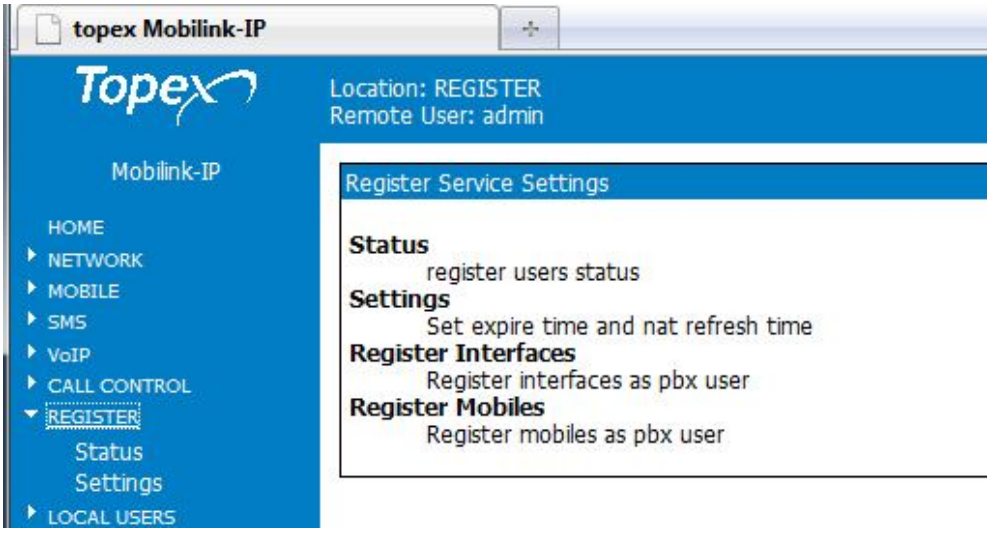
Here you can enter several parameters for the Call Control application.



In the example above, the maximum number of failures for registration of SIP users has been set to 12.

6.8 REGISTER

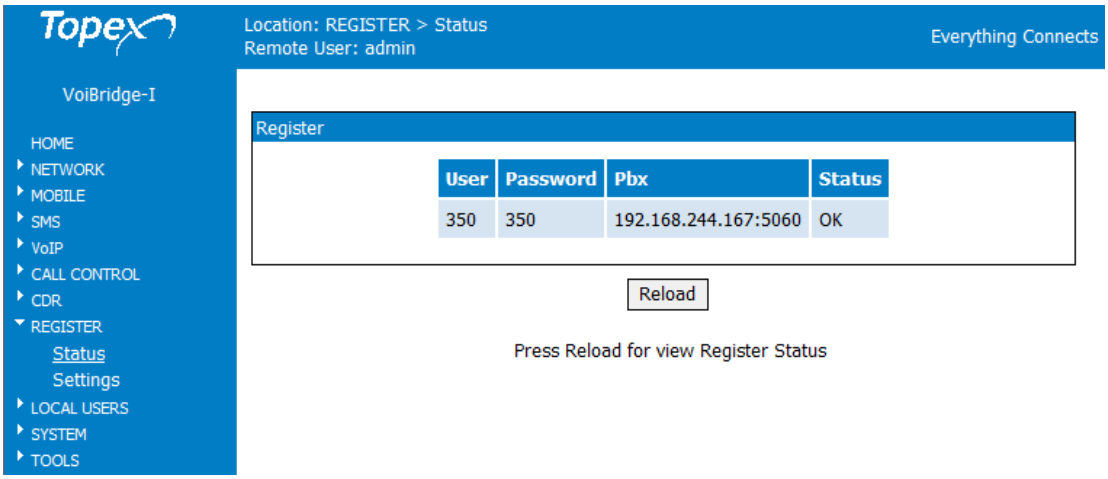
Settings for the registration service – lets you register to MobiLink-IP different local or remote users:



There are two section, the first one just shows the status.

6.8.1 Status

Shows the state of the registered users:

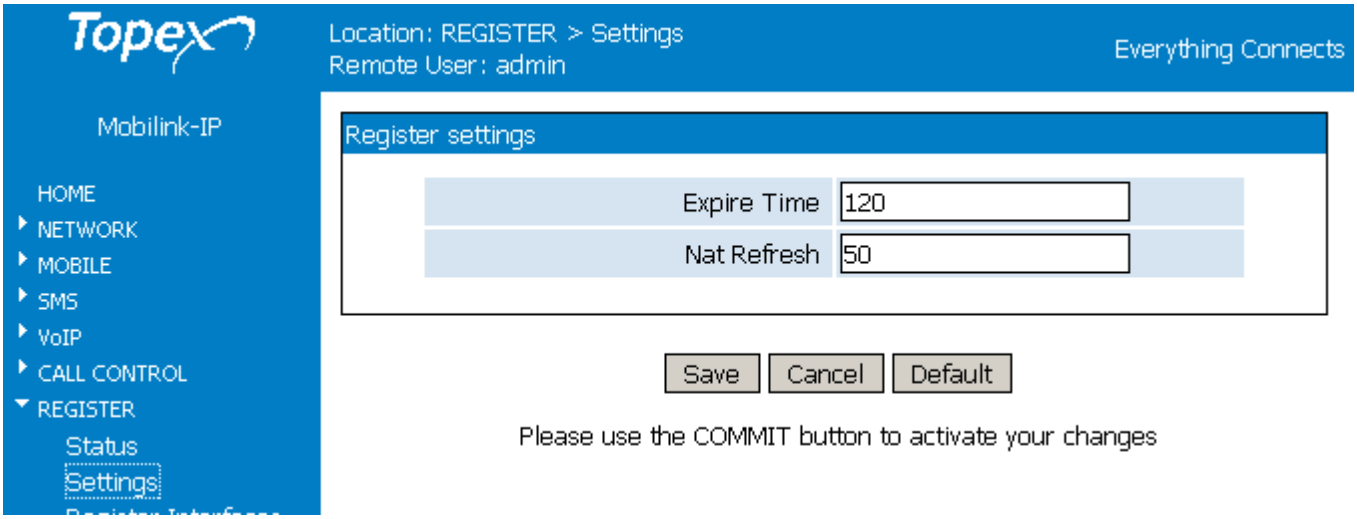


There are shown all attempts at registration to the IP PBX (user and password) and their state: either successfully registered (OK) or failed.
In the following example, you can see three extension users successfully registered to the IP-PBX, and two other whose registration has failed:

User	Password	Pbx	Status
350	350	192.168.244.167:5060	OK
346	346	192.168.244.167:5060	OK
370	370	192.168.244.167:5060	OK
298	298	192.168.244.167:5060	Failed
650	650	192.168.244.167:5060	Failed

6.8.2 Settings

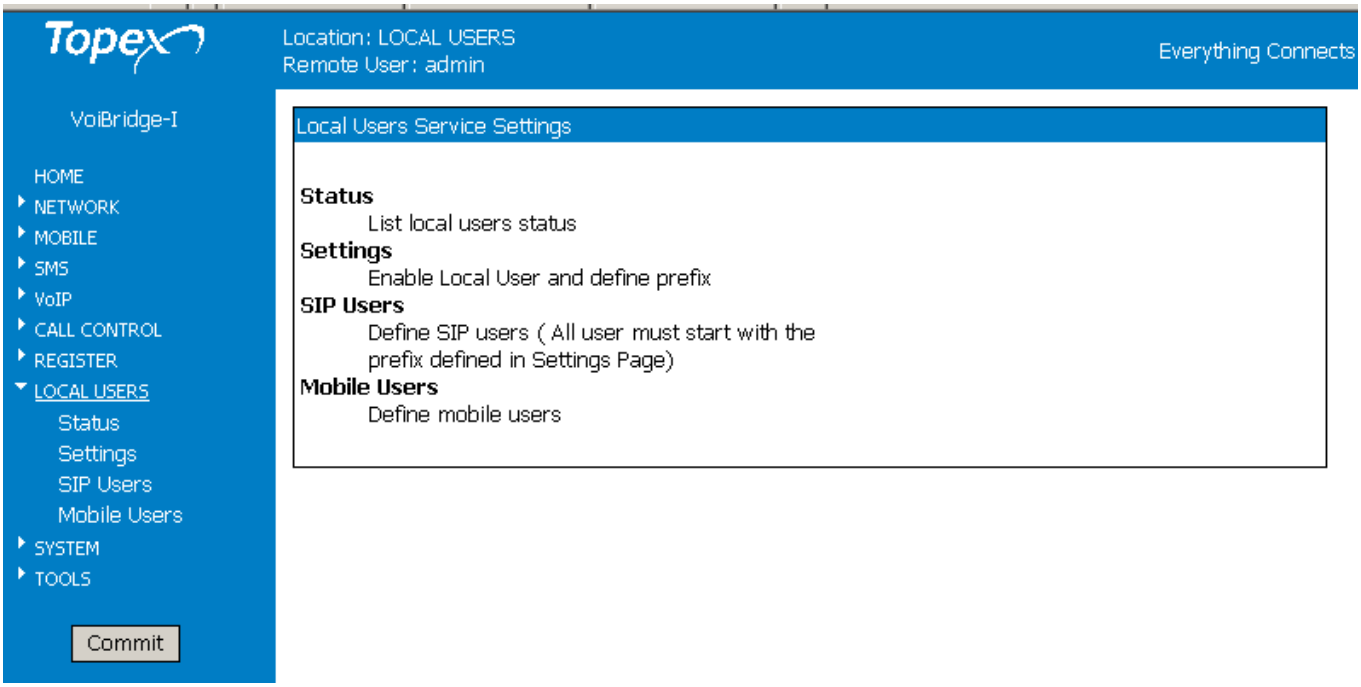
Here you can set up the general parameters for registration.



These are **Expire Time**, time interval after which the registration is repeated, and **NAT refresh**, the duration while the NAT service remains open after a data packet is sent from MobiLink IP to the remote PBX, to allow the PBX to call back the MobiLink-IP equipment.
Both values are expressed in seconds.

6.9 LOCAL USERS

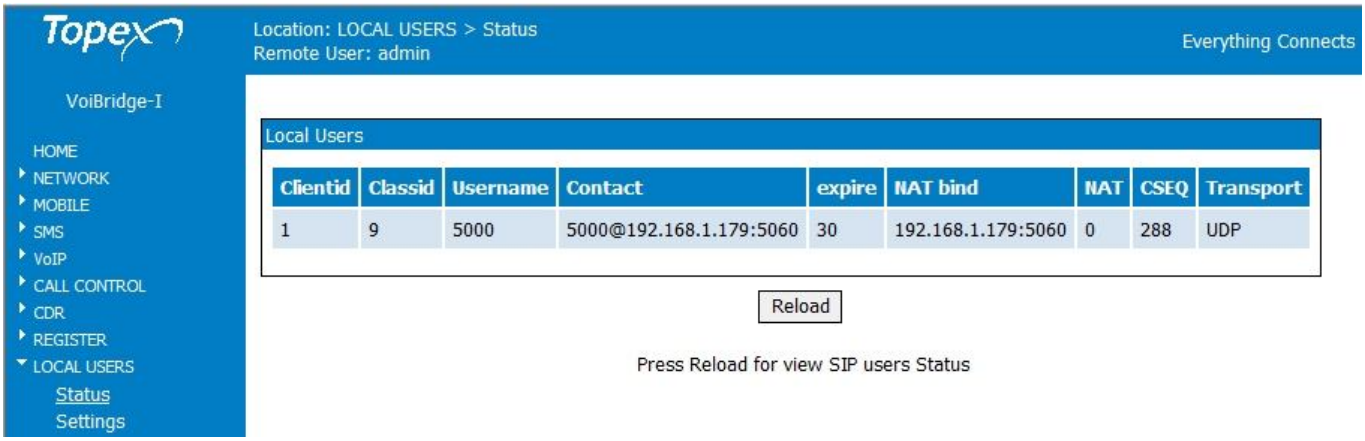
Allows you to define local users of the MobiLink IP gateway, respectively SIP users and Mobile users.



Both Sip users and Mobile users are considered as local, but the page **Local User > Status/Settings** described here refers only to SIP Users (features Enable, Prefix)

6.9.1 Local Users Status

It shows the state of the currently registered users, such as “5000’ at the IP address of 192.168.1.179 on port 5060 in the example below:



Several fields of information are shown for each user: ClientID, ClassID, Username, Contact, NAT bind, expire, and so on.

Clientid: each registered user has associated from configuration a client ID, here it is one, being the first and only user registered to the pbx.
Classid: also, every user has associated from configuration a Class ID, 9 in this case.
Username:5000 in this example.

Contact: one or more contact addresses for the user, the URI where the user may be found.

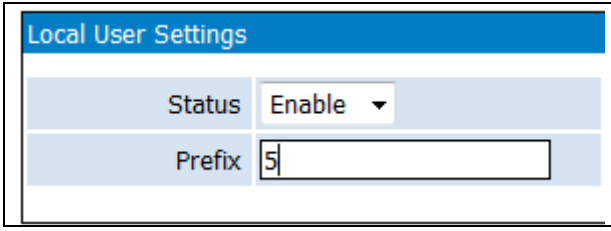
CSEQ: the value of the Cseq header form REGISTER, identifies in a sequential way each message. This header field serves to order transactions within a dialog, to provide a means to uniquely identify transactions, and to differentiate between new requests and request retransmissions.
It begins with a random number and it increments with each new REGISTER message.

Expire: gives the relative time after which the message (or content) expires. It is the value, in seconds, for which it was registered, 30 seconds in this case. This means that when idle, it will register itself again every 30 seconds.

NAT bind: the IP address of the NAT.

Transp = the de transport protocol by which it was registered. It may UDP, TCP or TLS. TLS - Transport Layer Security is the successor of SSL (Secure Sockets Layer). It is a cryptographic protocol which provides communications security over the Internet. Widely used for applications such as web browsing, electronic mail, Internet faxing, instant messaging and voice-over-IP (VoIP) in this case. allows client/server applications to

6.9.2 Local Users Settings

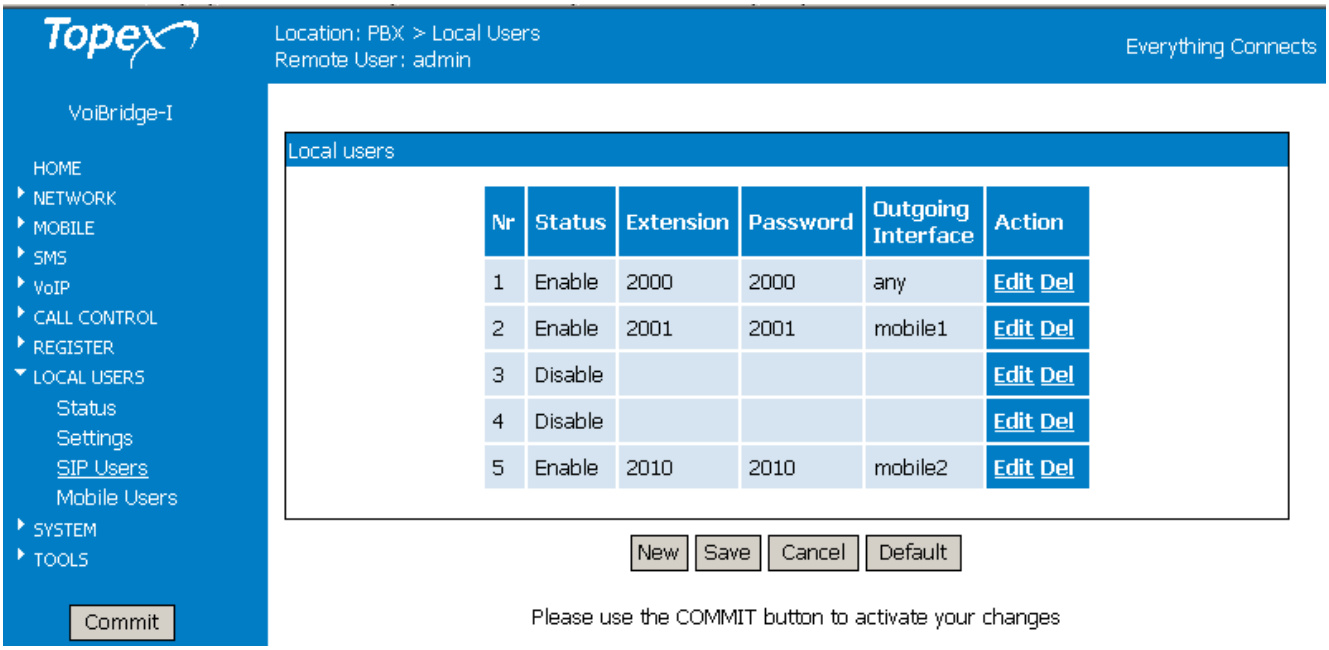


Here you may define the general settings for the local users.

Status – **Enable** or Disable.
If the local users are not Enabled, they will register, but they won't be able to be called.

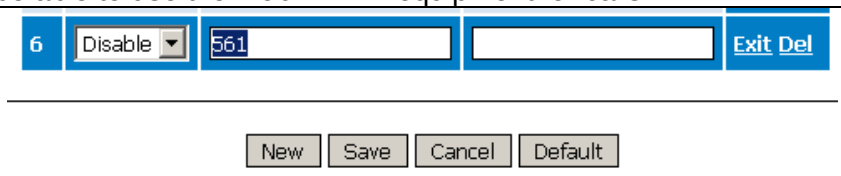
Prefix – a prefix that allows calls to be sent to the local users.
All SIP users must start with this prefix. It must be different form the prefix used by the IP PBX.
For instance, when the extensions of the IP PBX are local numbers starting with 2 or 3 (201, 350 etc), the prefix for SIP local users should be "5".
Everything that does NOT begin with the digit "5", will be sent to the PBX.
Depending upon the actual settings of the PBX, a single digit may be enough, or you must specify several, such as "50"

6.9.3 Local Users Definition



Register the SIP Users who will be able to use the MobiLink IP equipment for calls.

The list is empty at first - click the button **New** to create a new (empty) record.
Then use **Edit** to enter the data for the specific SIP user:



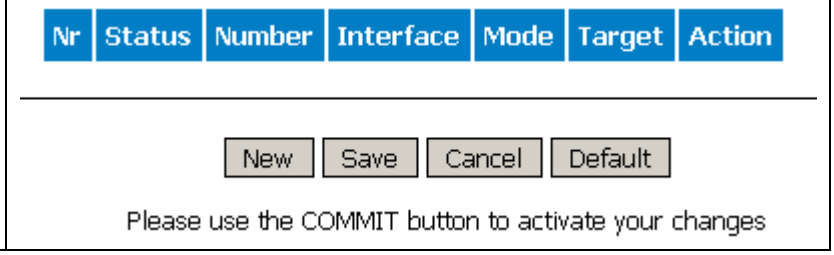
Use Exit to leave the current line , then Save to save the latest settings.
For each user, fill in the local extension number, such as "502", and the corresponding password, used together with SIP username for SIP user registration.
The settings for expiration tine and NAT refresh are global (for all users), and they have been.
Notice that each entry in the list of registered SIP users may be individually enabled or disabled, so there can be a list with several users, out of which only some are currently enabled (active).

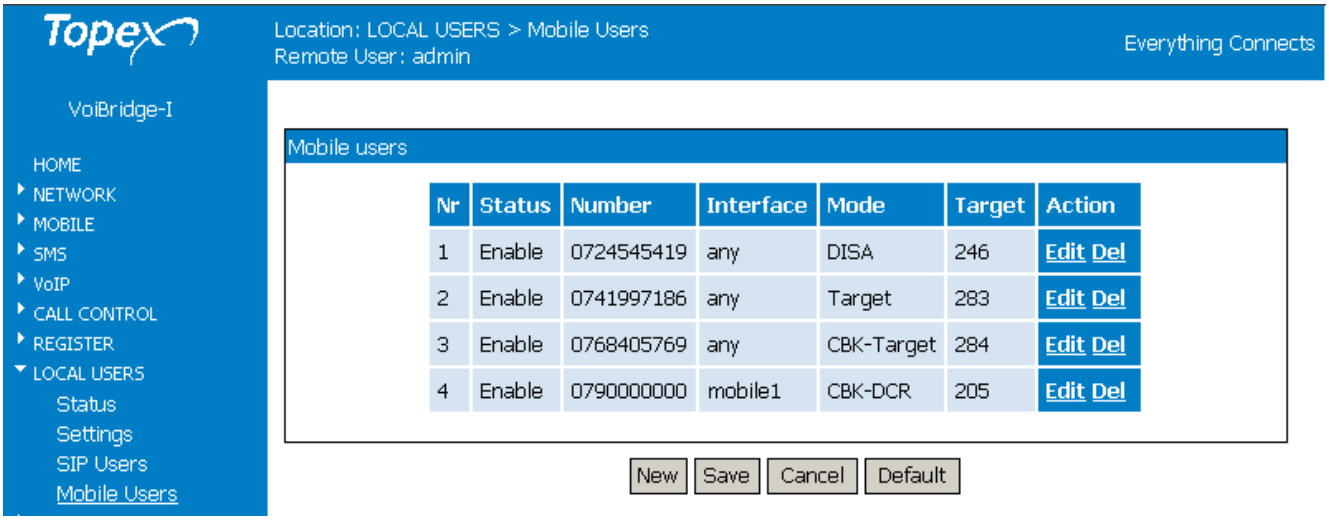
6.9.4 Mobile Users Definition

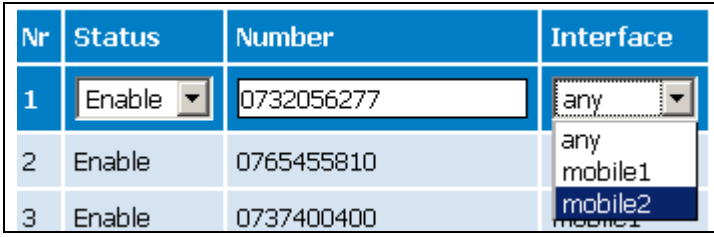
Define the local Mobile users. Registers some mobile phone numbers as user, which may also be considered as IP phones registered to the IP-phone exchange.

At first, the list is empty.

You can create New entries, edit them, and You can individually Enable or Disable each entry in this “Mobile user” table.







Enter the mobile phone number and associate it with one of the mobile interfaces, or leave it to “any”, for use with any mobile modules.

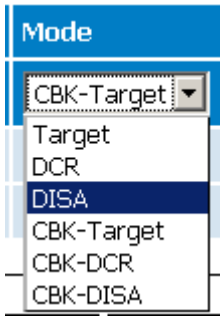
Then select the **Mode**, which describes how the incoming call from the respective mobile number will be treated by MobiLink IP. There are two groups of three options, direct (straightforward) and with call-back. For each of these, you have three choices:

Target – the call is routed to the target, such as the number of a local extension, 289.

DCR –Dynamic Call Routing. Instead of a static routing table, dynamic routing is used, when a mobile user rings, he will be automatically connected to the extension that has called him previously!

DISA – the caller receives DISA tone, so he can dial the number of the destination using DTMF. The same options are also available with CBK (call-back) function.

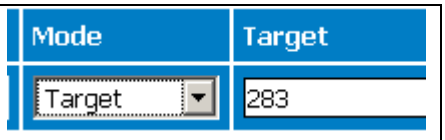


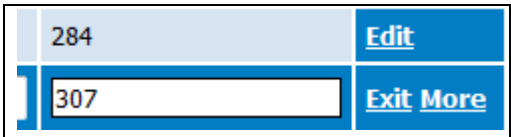


CBK – Call Back

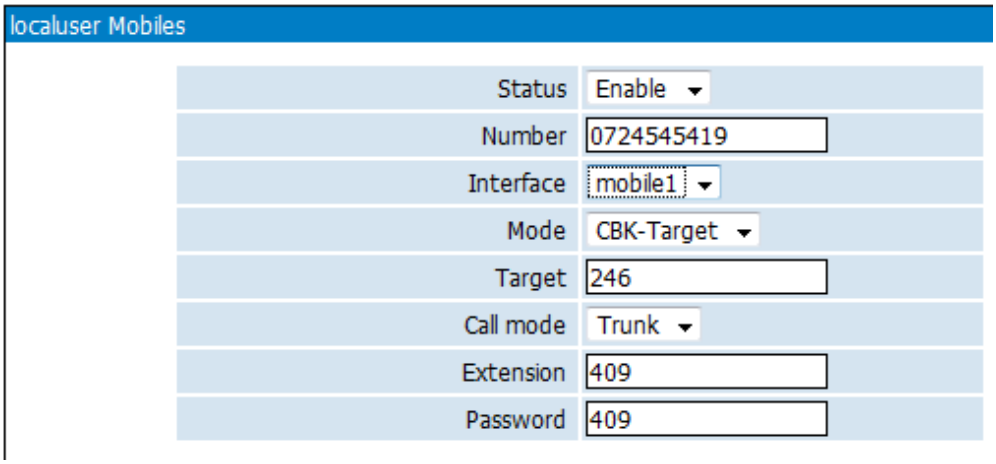
The call-back feature (CBK) means that when a number form the list calls in, MobiLink-IP hangs up, then initiates a call to the respective number, placing him in connection with the intended target. This way, the clients in the fields will no longer be charged for the calls, the billing will be for the SIM cards used in MobiLink IP!
With call-back, there are also available three modes of treating the incoming calls, as target (**CBK-target**), as DISA (**CBK-DISA**) or using Dynamic routing of calls (CBK-DCR)

Note:
In "CALL CONTROL>Incoming Calls" there is no CBK option. Only the mobile numbers listed in the above table can benefit of the callback feature, to prevent abuse!

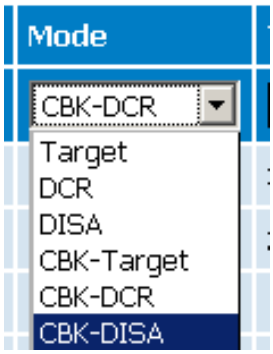
Target – when you select the mode Target, you must also complete the field Target, enter the number of the destination for the incoming call. Here, target has been set to extension number "283"	

	**Action** – from the last column, select the action to be performed. When you are editing one of the "Local user Mobiles" rows, the last field, Action, provides you with the options **Edit**, to make changes, respectively **Exit**, to get out, or **More**, to access further parameters.

Click the link "More" to go to the next window for localuser Mobile settings, as shown below:



Select Enable to activate the feature, enter the remote mobile phone number that you want to register as PBX extension, then choose one of the two mobile interfaces to assign it.
You can leave it to the default "any", or lock it to one of the GSM modules, "mobile 1" or "mobile 2" .



Mode – establishes how the incoming calls will be treated. There are two main options, direct (straightforward) and with call-back.
For each of these, you have three choices:
Target – the call is routed to the target, such as the number of a local extension, 289.
DCR – Dynamic Call Routing. Instead of a static routing table, dynamic routing is used, when a mobile user rings, he will be automatically connected to the extension that has called him previously!
DISA – the caller receives DISA tone, so he can dial the number of the destination using DTMF.
The same three options are also available with CBK (call-back) function.

6.9.5 Dynamic Call Routing and Call-back (CBK) Operation

DCR has been explained in the chapter about Call Control. Here it works in the same way for the mobile users that are registered.

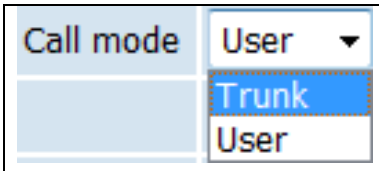
The **call-back** feature means that when a phone number form the list calls in, MobiLink IP hangs up, then initiates a call back to the respective mobile number, placing him in connection with the intended target.
This way, the clients in the field will no longer be charged for the calls, instead the billing will be for the SIM cards used in the MobiLink IP gateway!

Port	Direction	Call Type	State	Protocol	ANI	DNIS	ips	iprtps	Duration	SID
32	CALLBA	in	connected	CAS	MYVOIP	283	0.0.0.0	0.0.0.0	54	3de8095d
263	SIP	out	connected	SIP	MYVOIP	283	192.168.244.167	192.168.244.168	40	3de8095d

With call-back, there are also available three modes of treating the incoming calls, as target (**CBK-target**), with DISA (**CBK-DISA**) or using Dynamic routing of calls (**CBK-DCR**)

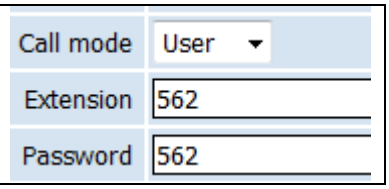
Only the numbers listed in this table can benefit of the callback feature, to prevent abuse!

Target – enter the number of the destination for the incoming call. This must be completed even when you select DCR operation, to serve as a reference value when the dynamic list is empty!



"**Call Mode**" decides how the localuser mobile calls (both incoming and outgoing) will be treated. Trunk mean a usual call, with options Target, DISA or dynamic routing, while User means it will be registered to the IP-PBX as a local user. In this case you must also complete the next two fields, for authentication.

Extension and password – the name of the extension of the IP PBX and its corresponding password. The mobile phone numbers in the list will be registered as extensions of the IP PBX: 441, 562 etc.



6.9.6 Trunk or User?

MobiLink IP has additional flexibility, the calls that came in via GSM modules and get out as SIP calls can register to the SIP PBX either as trunks, or as users.

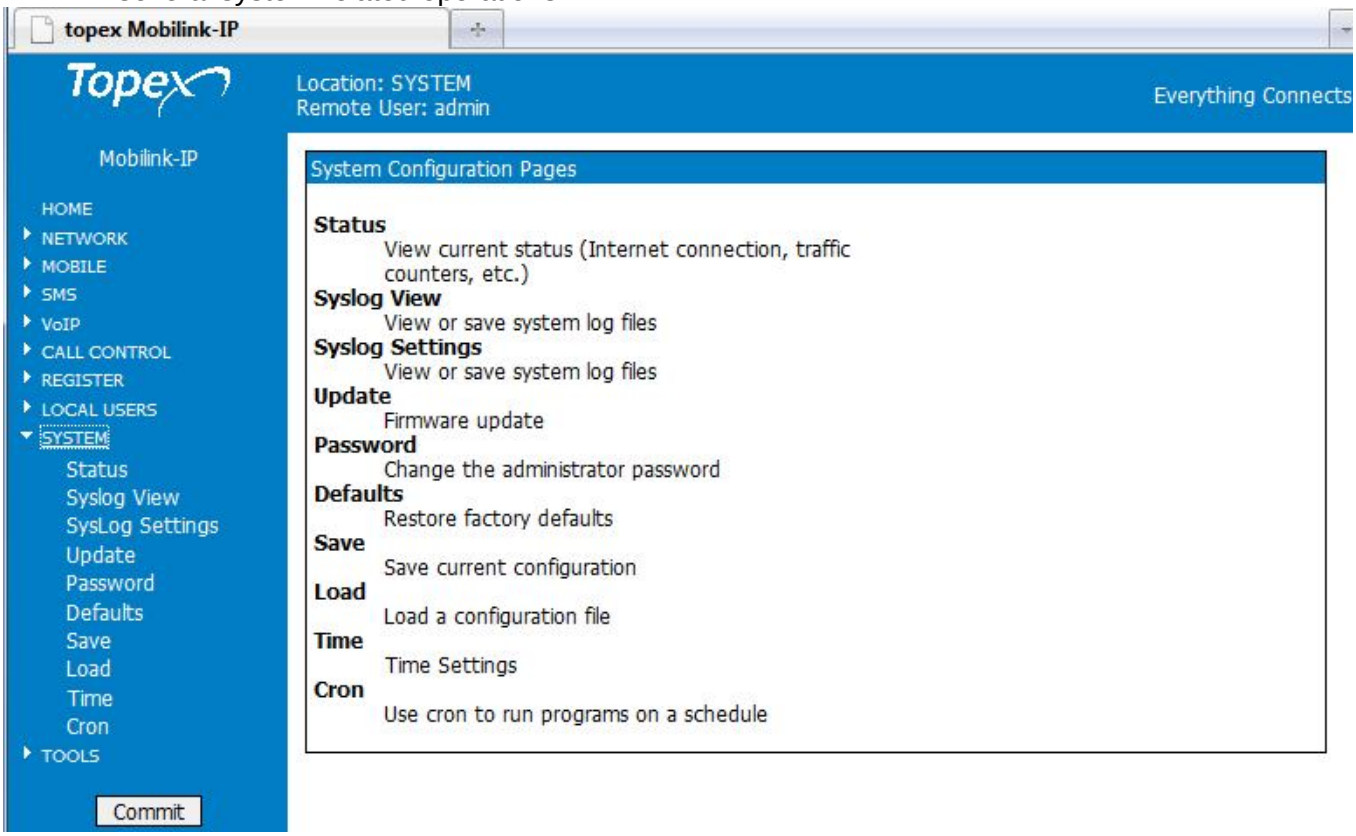
The trunk option is recommended when MobiLink-IP is used in a local, private network, which has restricted, controlled access.
But when the gateway is used at a public Internet address, anyone may get in, so it is very important to restrict the access, to limit those who are able to get in. This is done by selecting for Call mode “User” instead of “ Trunk”, so the access will require authorization with user name and password.

Incoming calls – only available for users who are registered to the IP-PBX. For those who are not registered, the call cannot proceed. The call gets out with the ID of the user that you have defined.

Outgoing calls – if it is called from another extension of the respective PBX, MobiLink-IP replaces the call number with the mobile number, then performs an outgoing call using the mobile interface you have selected. It uses the mobile number associated with the respective extension.
Please note that the caller from the local PBX does not have to know the mobile phone number, he just rings to the local SIP extension, a number such as 441 or 647 in the previous examples.

6.10 SYSTEM

It shows the current state of the MobiLink IP equipment and the logs also allows performing several system-related operations.

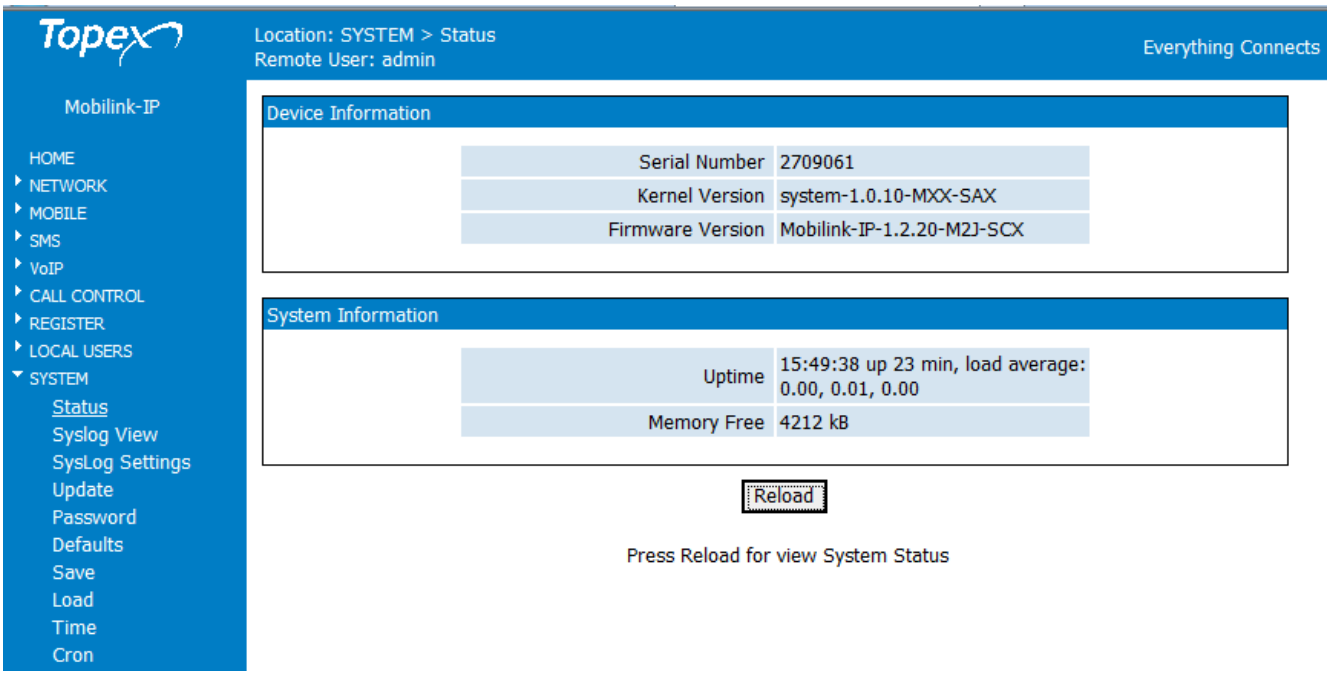


The system configuration pages include these settings:

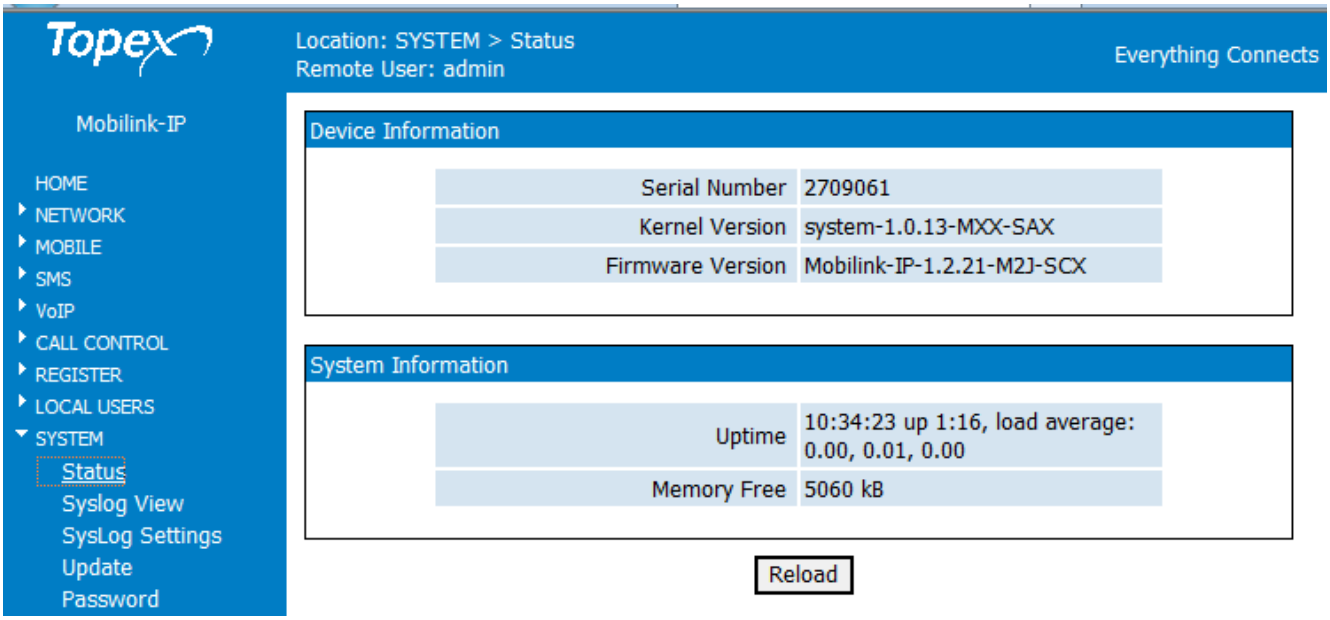
- Status, displays the current status of the MobiLinkIP equipment
- Syslog View, shows the log file and allows you to save it
- Syslog Settings, settings for the remote log
- Update, you may perform firmware update or upgrade
- Password, allows modification of the password
- Defaults, restores the factory default settings
- Save, saves the current configuration of MobiLinkIP
- Load, loads a configuration previously stored
- Time, performs settings for the local time
- Cron, programs a time-based job scheduler.

6.10.1 Status

Shows the status of the MobiLinkIP system. In some firmware versions, System Status and other special Admin functions may be protected by additional passwords.



Or:



This page displays information about the following items:

- Serial Number: each MobiLinkIP device from Rohde & Schwarz Topex S.A. has a unique identification number, such as 2709061, in the above examples etc. This is the serial number of the main board of the Topex S.A. mobile gateway.
  According to the requirements of the users, a certain MobiLinkIP motherboard may be fitted from factory with one of two modems of different types, or other hardware features, but the serial numbers remain the same;
- Firmware version: version of the application firmware running on MobiLinkIP: you may see " Mobilink-IP-1.2.8-M2P-SAX" or "MobiLink-IP-1.1.39-C2O-xyz". The firmware can be easily updated (a new version) or upgraded (new software features added)

Mobilink-IP-1.2.21-M2J-SCX

- Kernel version (Operating system version), such as "system-1.0.8.-MXX" or << system-1.0.9-MXX-SAX >> in the examples above. The application firmware and the operating system (root or kernel) may be updated separately, according to the requirements of the users.

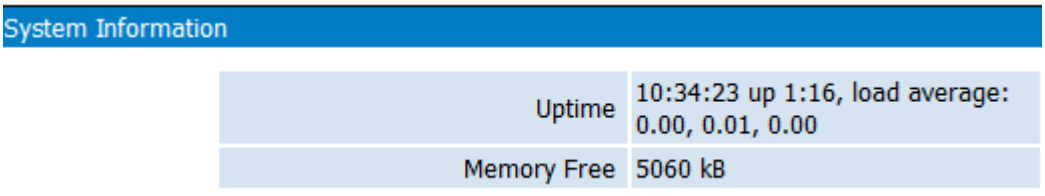
system-1.0.13-MXX-SAX

The operating system memory is write-protected, thus in case of problems, accidental erasure or power failure during updating, you still have a functional "kernel" allowing you to load a new software image;

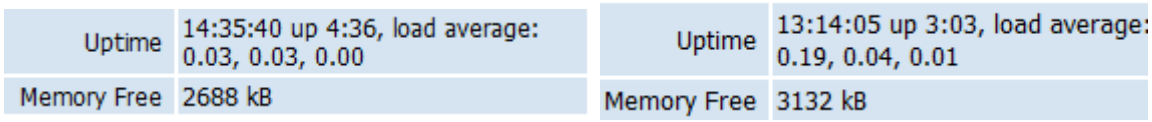
- System uptime: time since the last restart of the MobiLinkIP, both in full format (hours:minutes:seconds) and short format (up 1 minute) "System uptime: 11:41:59 up 4:50";

System uptime: 20:00:46 up 5:25, load average: 12.03, 8.25, 4.77

- Load average: "0.06, 0.04, 0.01" or "load average: 1.50, 1.67, 1.71 " - info about system loading (maximum value / average value / number of active processes)



Or like this:

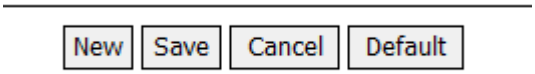




Press Reload for view System Status

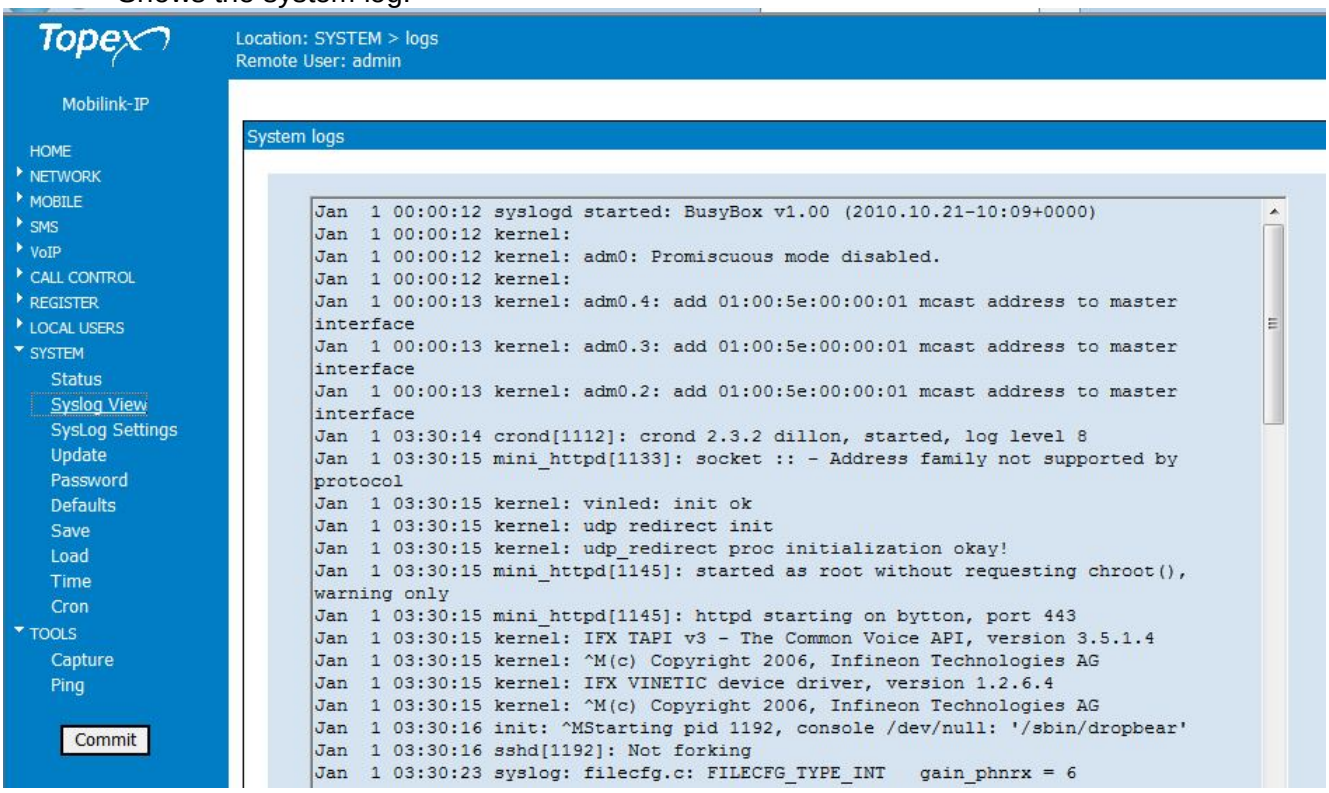
Click the **Reload** button located at the bottom of the page to refresh the display – this way you will be sure to see the most recent values!

All Status pages feature the Reload button, some of the Settings pages feature instead a "New" button in the bottom line, allowing you to create a new record (row).

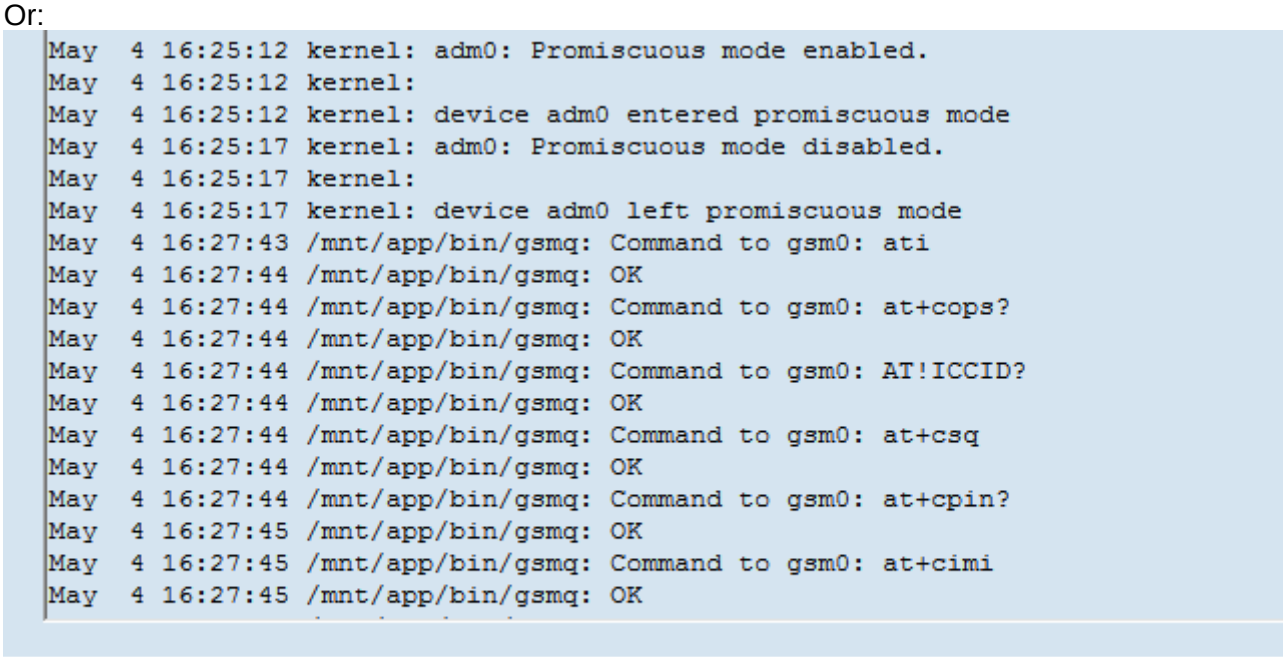


6.10.2 Syslog View

Shows the system log:



Or:



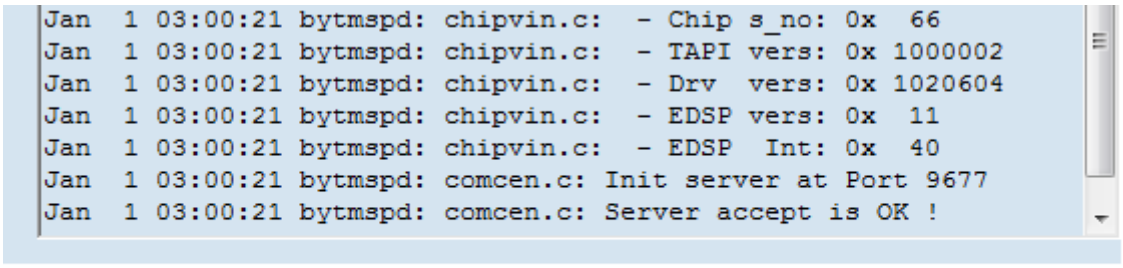
This “log” is a place where all the applications running on the MobiLinkIP store their output messages: status reports, confirmation or error messages, activity, etc.

It is a plain text (thus easy to interpret) record of actions taken by the software as it runs on MobiLinkIP: changes made, devices and drivers detected, files added or deleted, communication with the modem, network settings, etc.

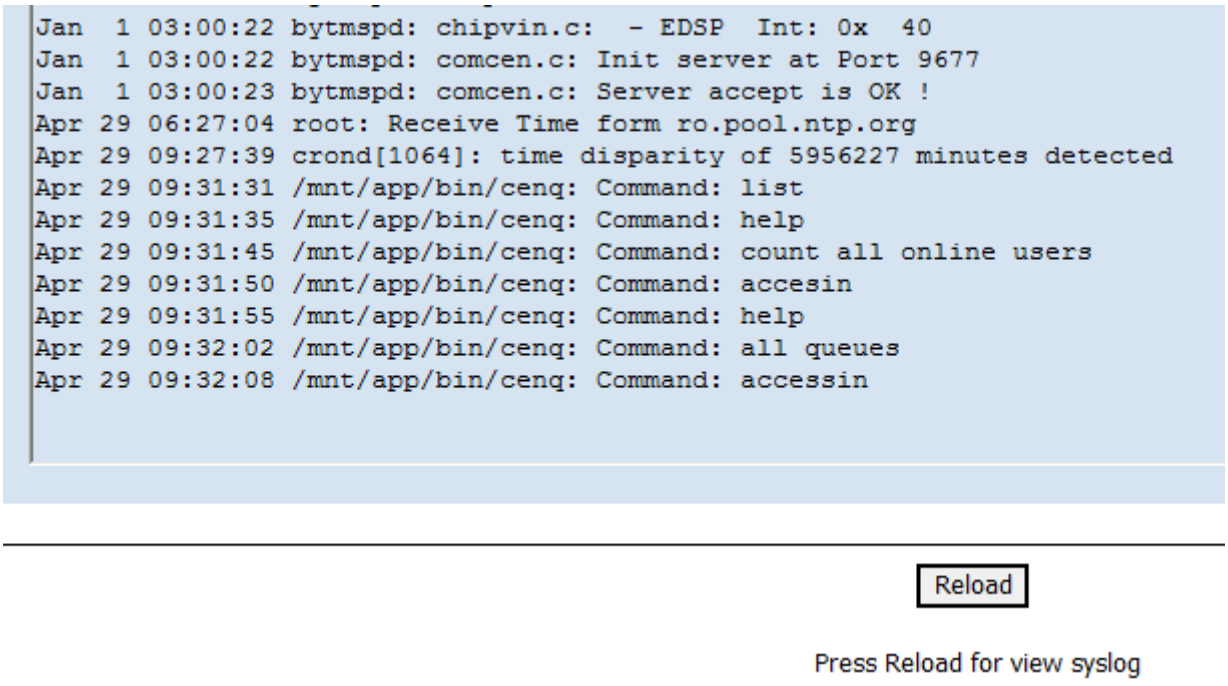
Correspondingly, records of the kernel or of the user info, debug messages, info or warnings can be seen in the log:

The log is very helpful when troubleshooting. It may be saved on a PC (simply use “Save As” option of your browser) for further examination.

Use the button “**Reload**” at the bottom of the Syslog window to refresh the display of the current log:

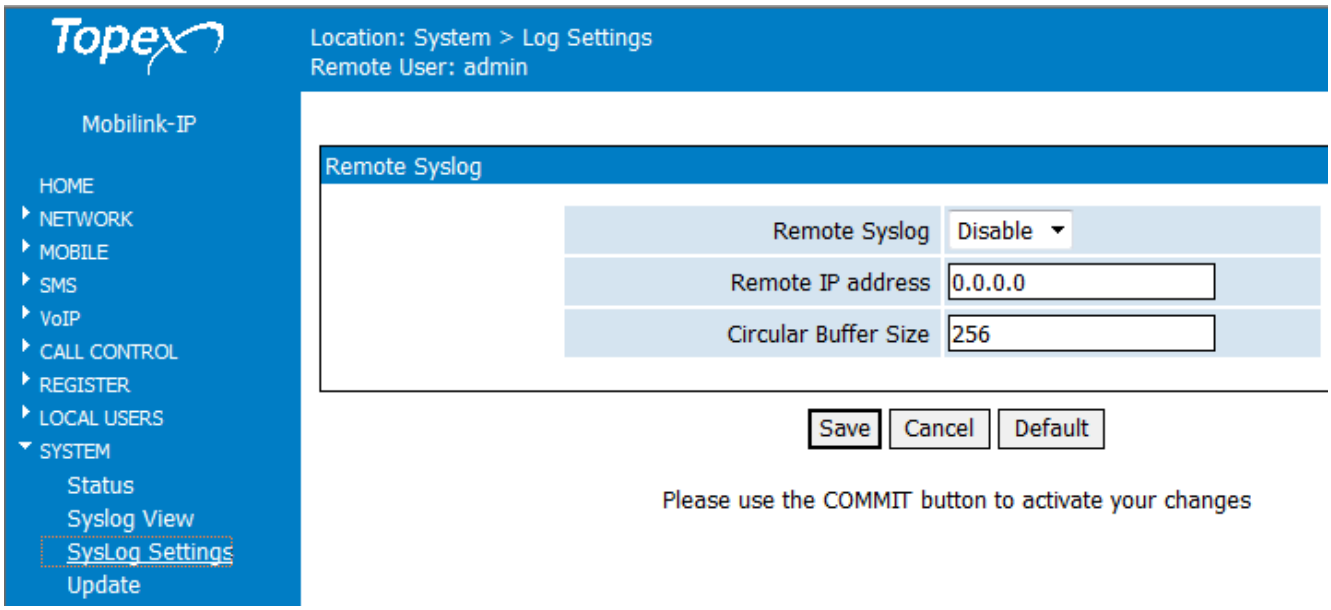


Or like this:

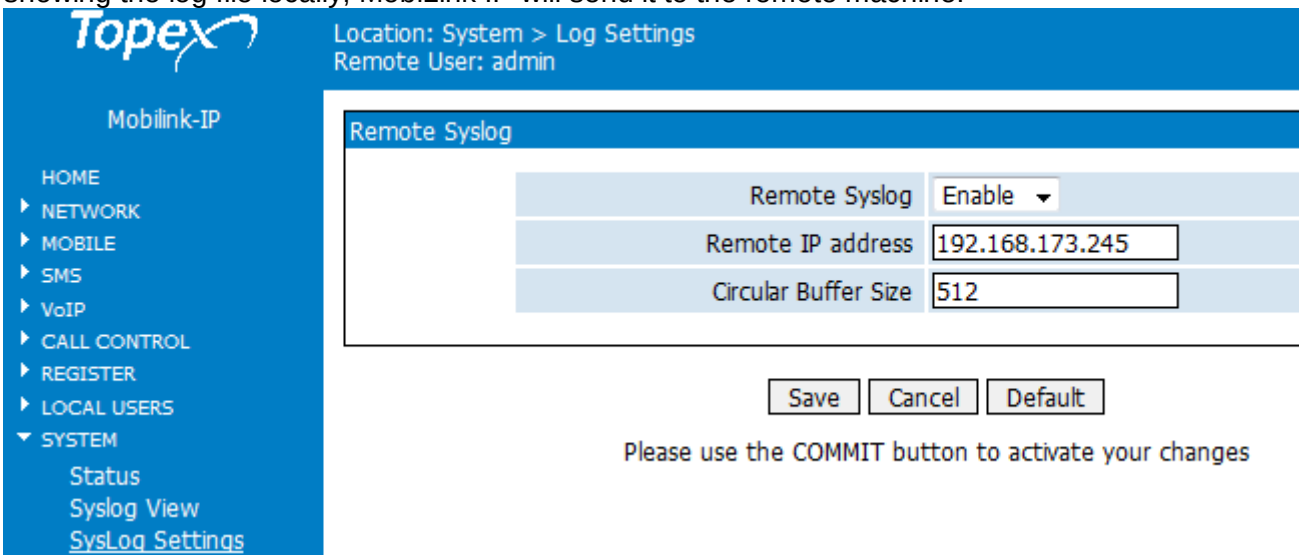


6.10.3 Syslog Settings

Settings for the remote system log:



By default, the remote log is disabled. When you select Enable and enter a valid IP, instead of showing the log file locally, MobiLink IP will send it to the remote machine.



You can also establish the size of the circular buffer that temporary stores the log (default value is 256).

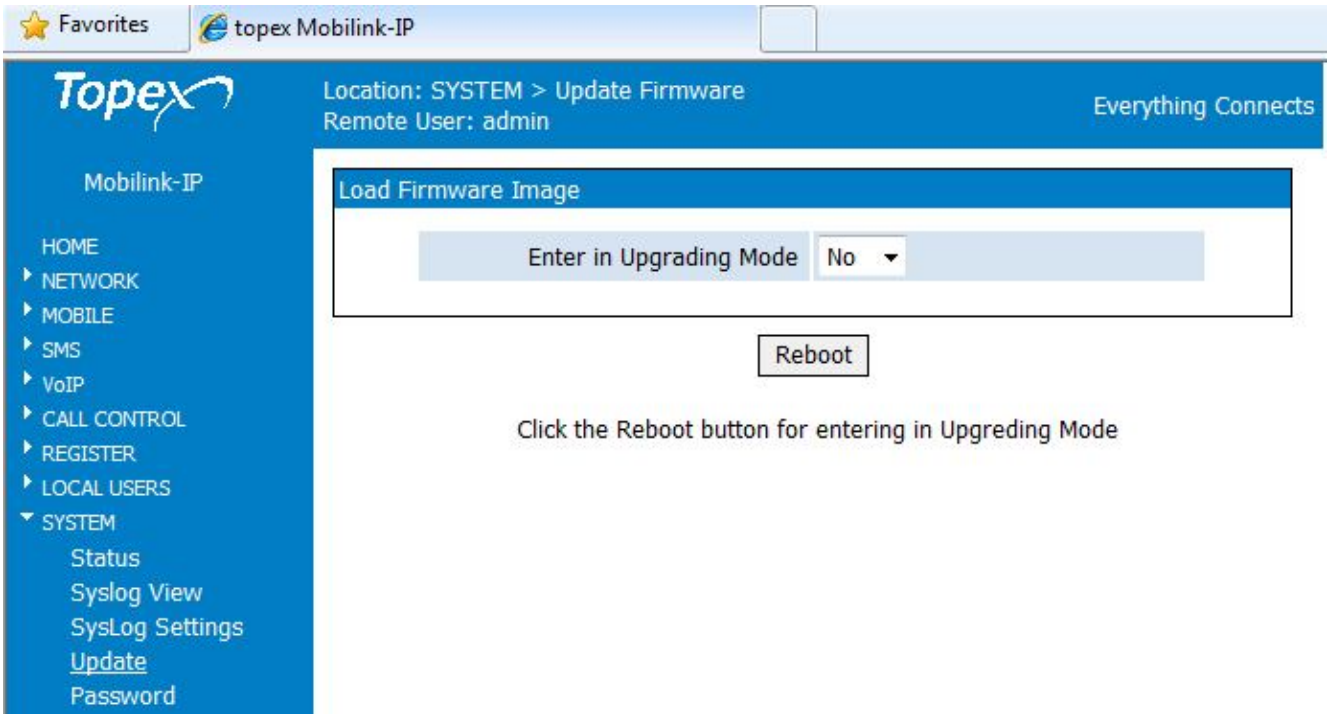
Note: the remote machine must have a "collector" program running, to receive and store the syslog messages. This collector is also known as a "syslog server" or "syslog daemon."

For the Windows platform, one of the most often used syslog server is Kiwi Syslog Server, available also in a free version.

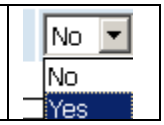
In the Syslog settings page also, do not forget to use **Save** and then **Commit** if you want to make your settings for the System Log persistent, otherwise they will be active only until the MobiLink IP equipment is restarted!

6.10.4 Update

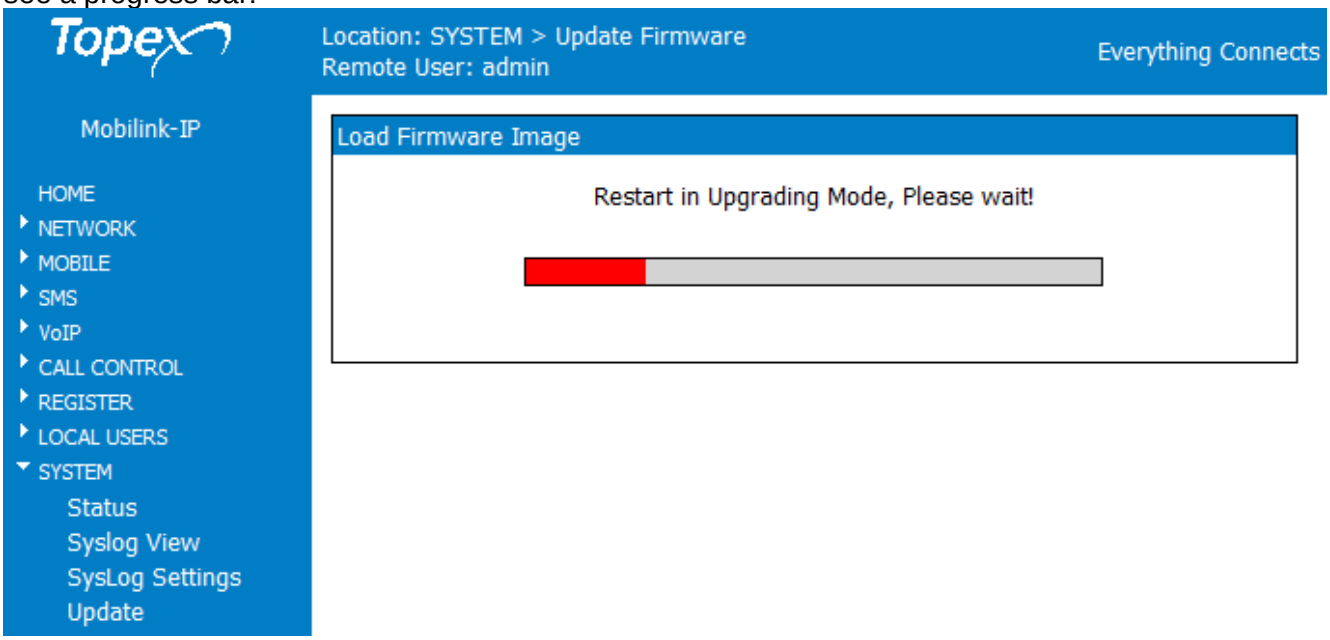
Allows one to perform an update or upgrade of the firmware running on the MobiLinkIP device.



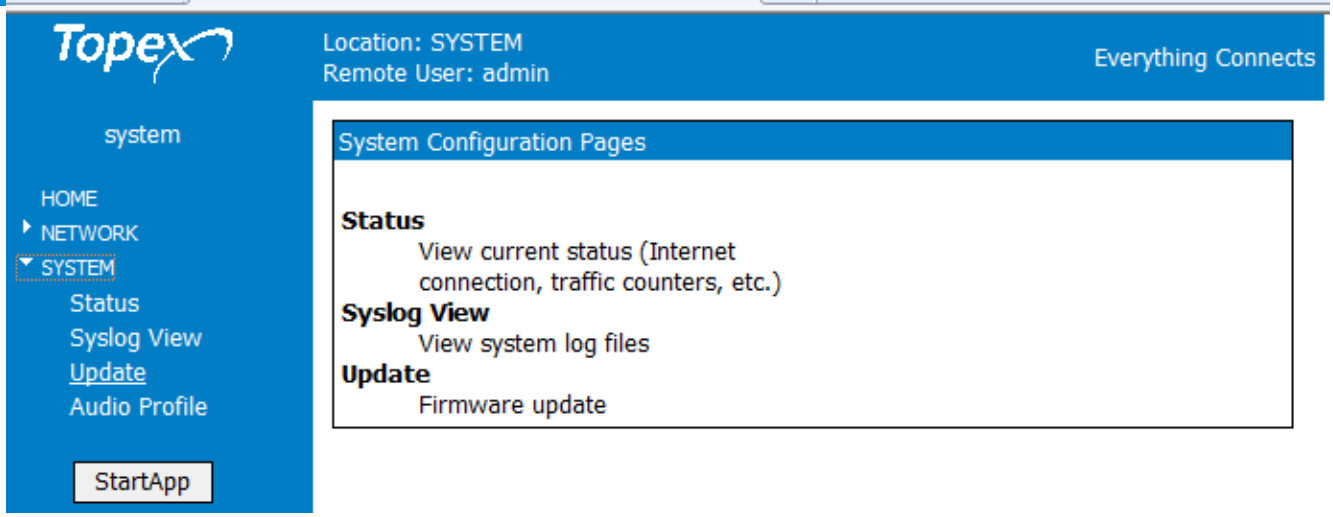
This webpage displays a single field, "**Enter in Upgrading Mode No/Yes**".

As you can see, the default is No, to prevent accidentally going to the mode of operation "Upgrade". If you do want to perform a software upgrade, select YES from the drop list, then click the button "Reboot" located below it.	

The screen will display the message "Restart in Upgrading Mode, Please wait!" and below it you will see a progress bar:



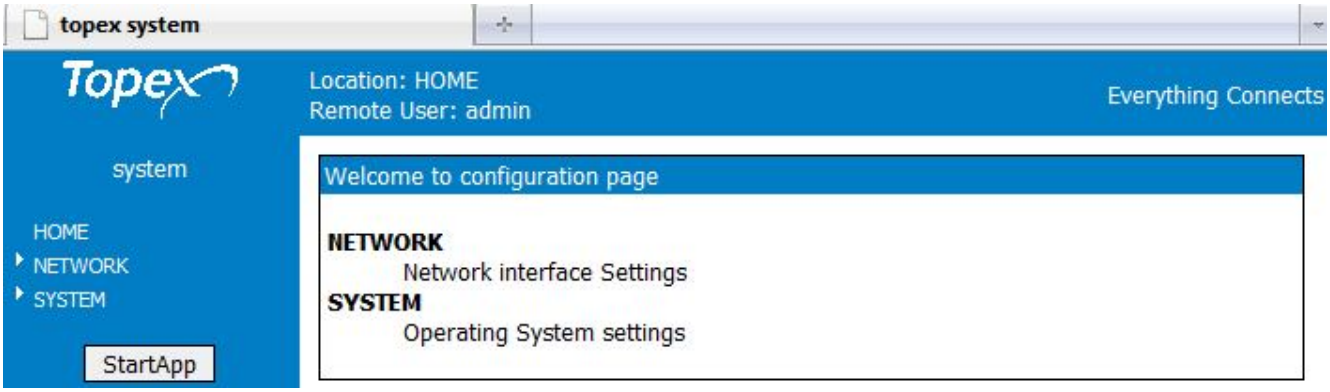
MobiLinkIP will shut down and restart in Upgrading (System) Mode of operation.



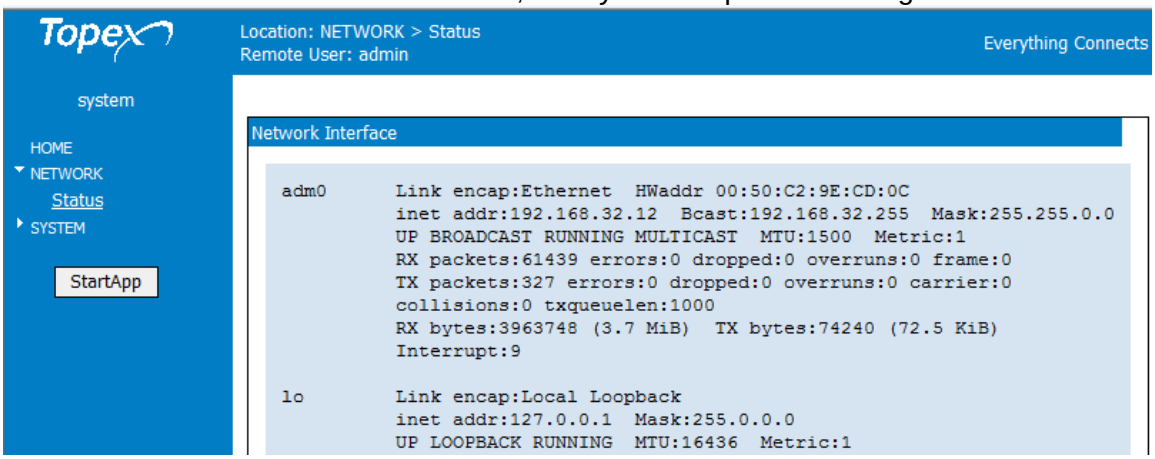
This special mode of operation stops the main application and leaves only the kernel operating, in order to frees up the memory of the equipment for the new firmware, allowing you to perform easily and safely the upgrade of software. Not only is the application stopped, but its Flash memory is dismounted, to prevent interference or corruption. This can bee seen on the outside of the case of MobiLink: only the STATUS indicator is blinking, showing network activity, the LEDs for Mobile1 and Mobile 2 are turned off.

Since the phone exchange application, during the updating process, MobiLink IP is not available for routing VoIP and mobile calls.
Also, if an error occurs during software update and the image file gets corrupted, the equipment will automatically restart in System mode, allowing you to load a firmware image which is good.

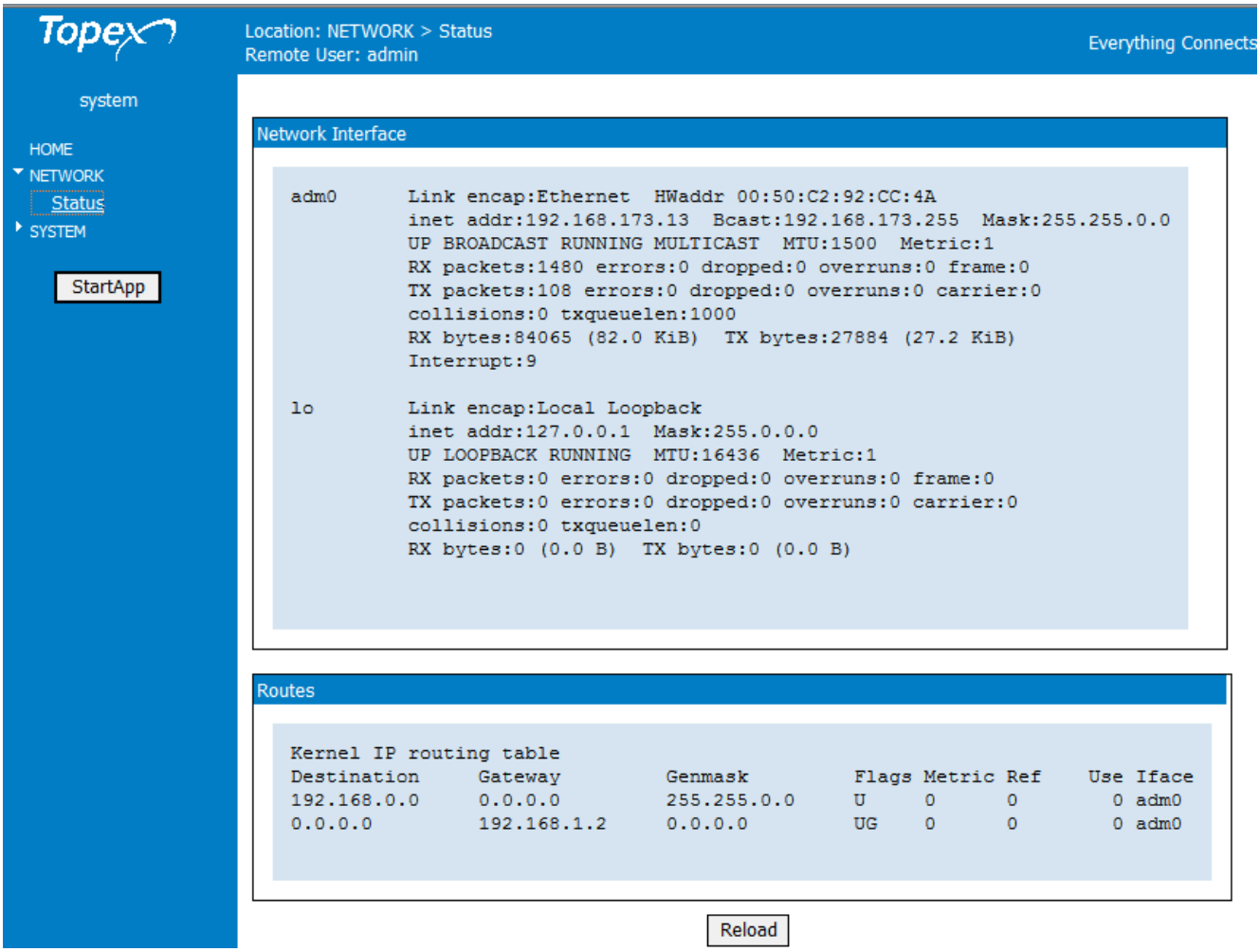
The Upgrade configuration page is simplified, containing just a few elements – MobiLinkIP is operating in System (Kernel) mode only.



There are only two pages available, NETWORK and SYSTEM.
Network shows the state of the network, here you can't perform changes.

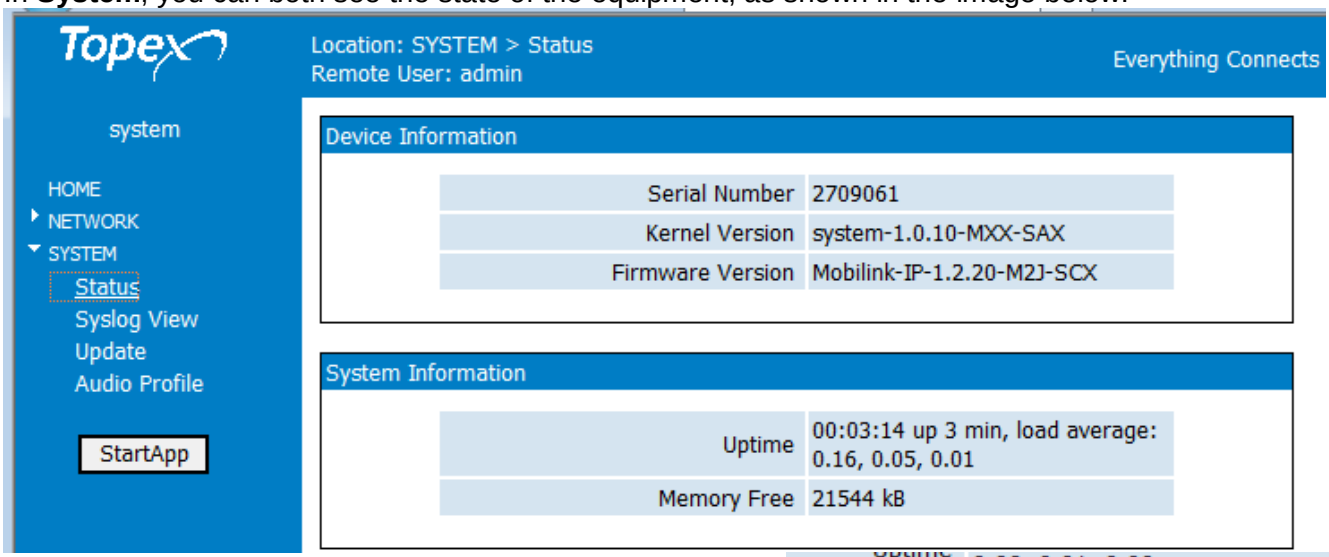


Or

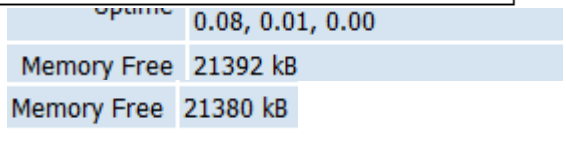


As you can see, the information is displayed only about a single Ethernet interface, the physical, real interface, since the VLANs and Aliases are created by the main application, which now is not currently running!

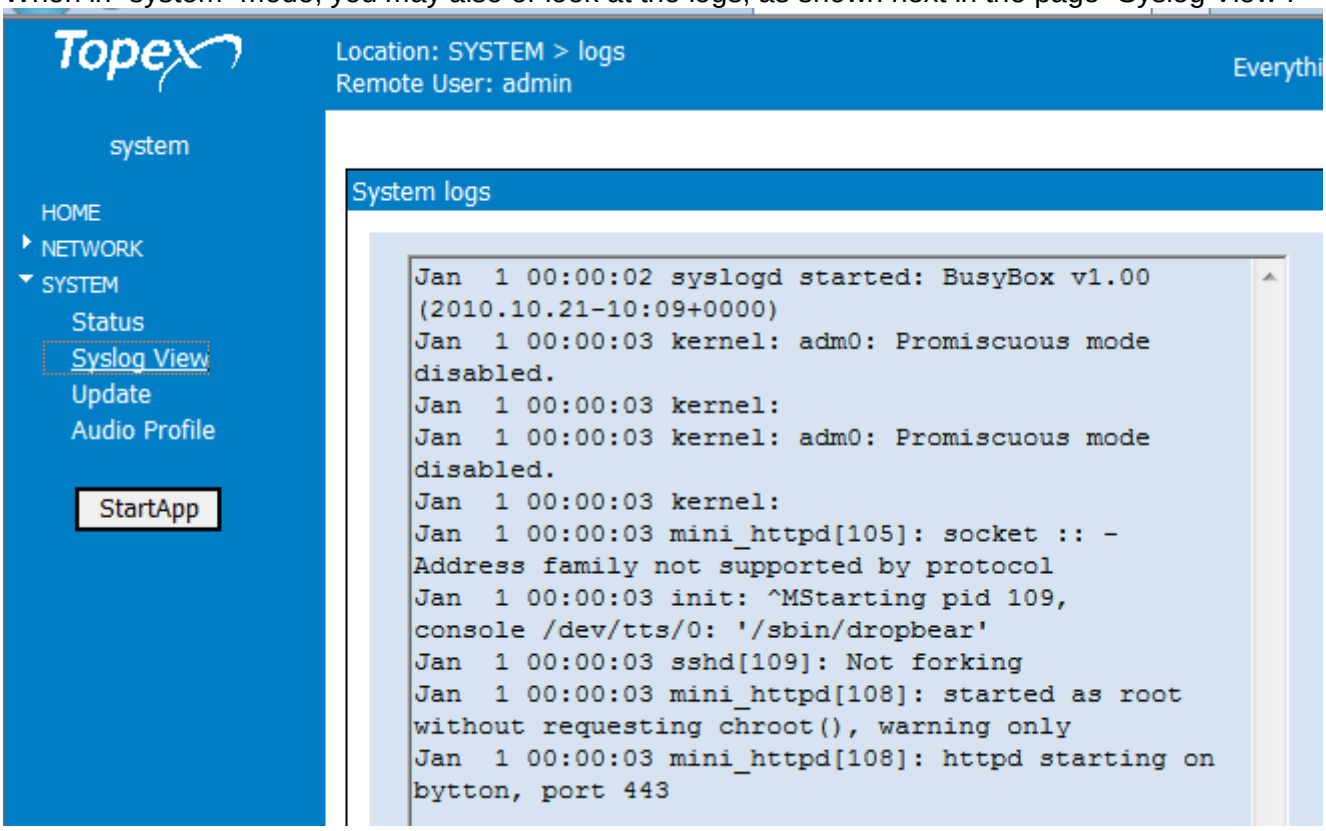
In **System**, you can both see the state of the equipment, as shown in the image below:



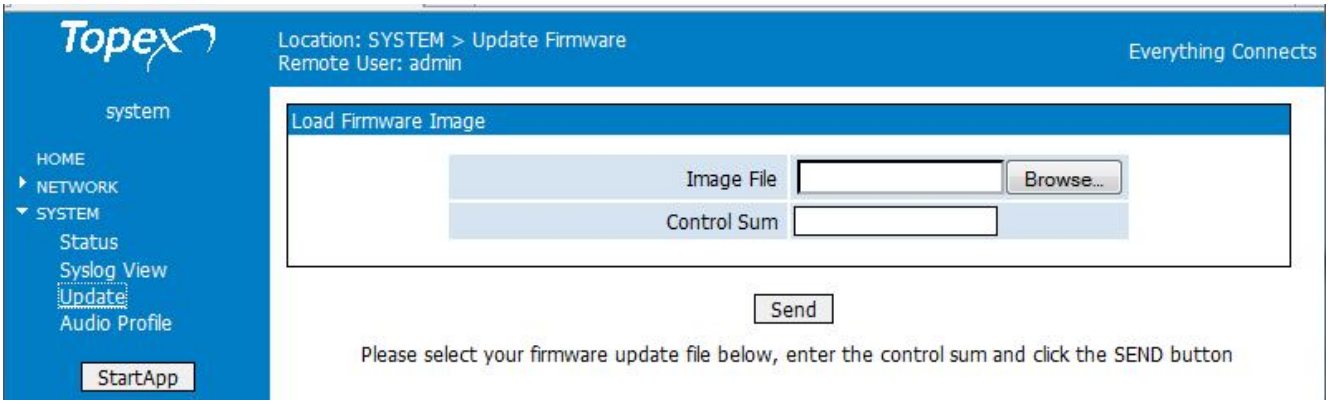
You can notice that the amount of free memory is much larger that in normal operation, precisely since the main application is not running (not loaded into the RAM of the equipment)!



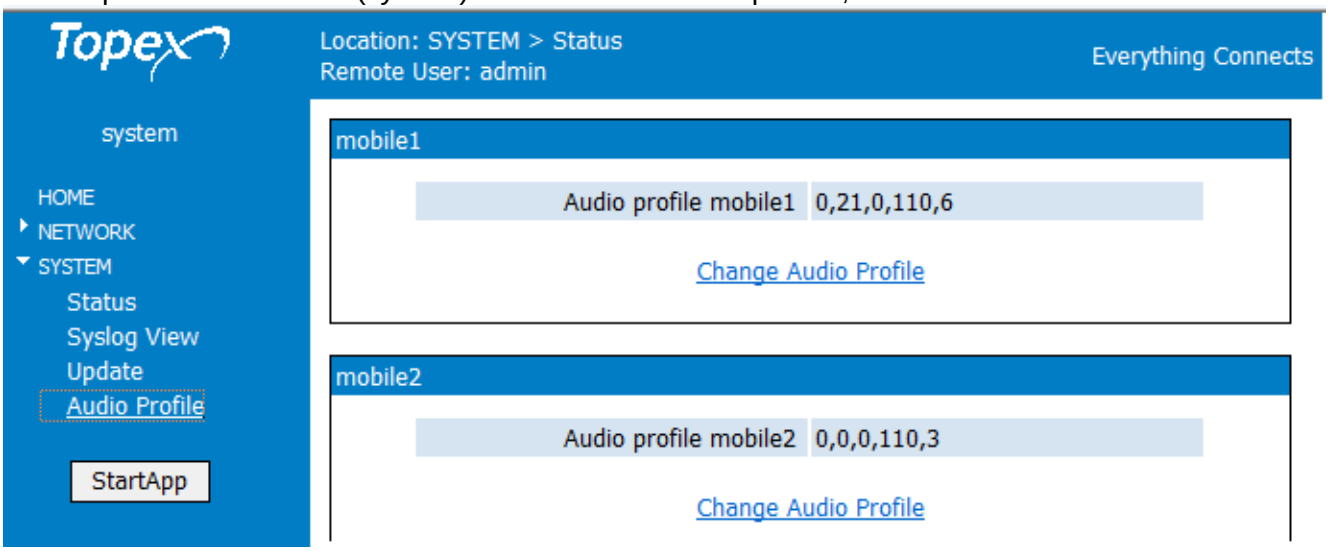
When in “system” mode, you may also or look at the logs, as shown next in the page “Syslog View”.



And, most important, you can also perform a firmware update!

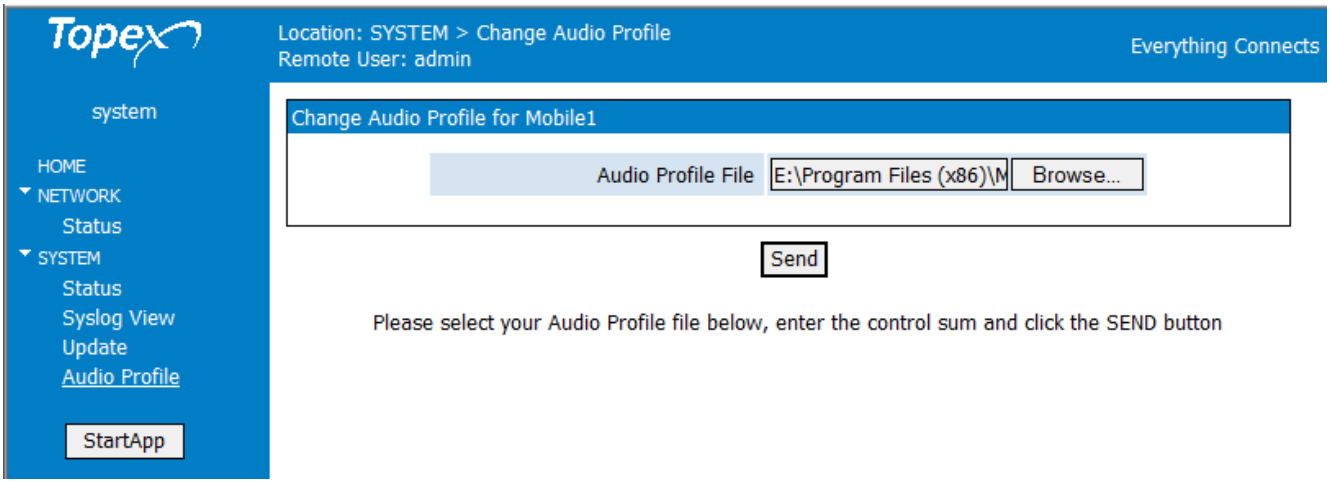


Other options in the kernel (system) mode include “Audio profile”;



Depending upon the actual firmware version and type of mobile modules in your MobiLinkIP equipment, this advanced feature may be available or not.

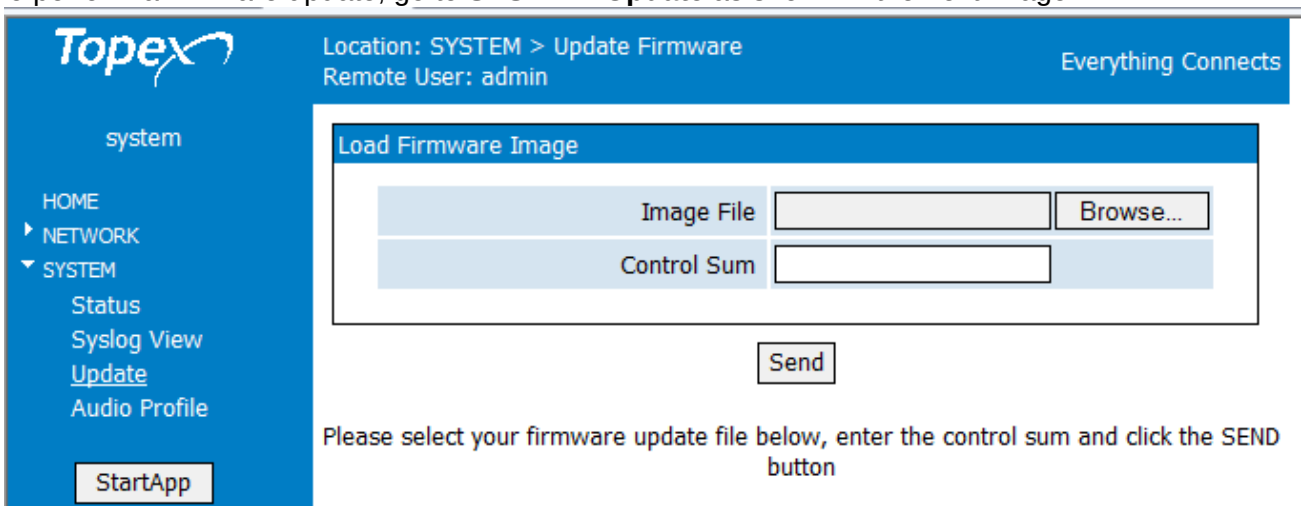
For each of the mobile modules, you can load a new “audio profile” file.



This is an expert-only feature, do not try to use it unless absolutely required!

Firmware Update

To perform a firmware update, go to **SYSTEM>Update** as shown in the next image:

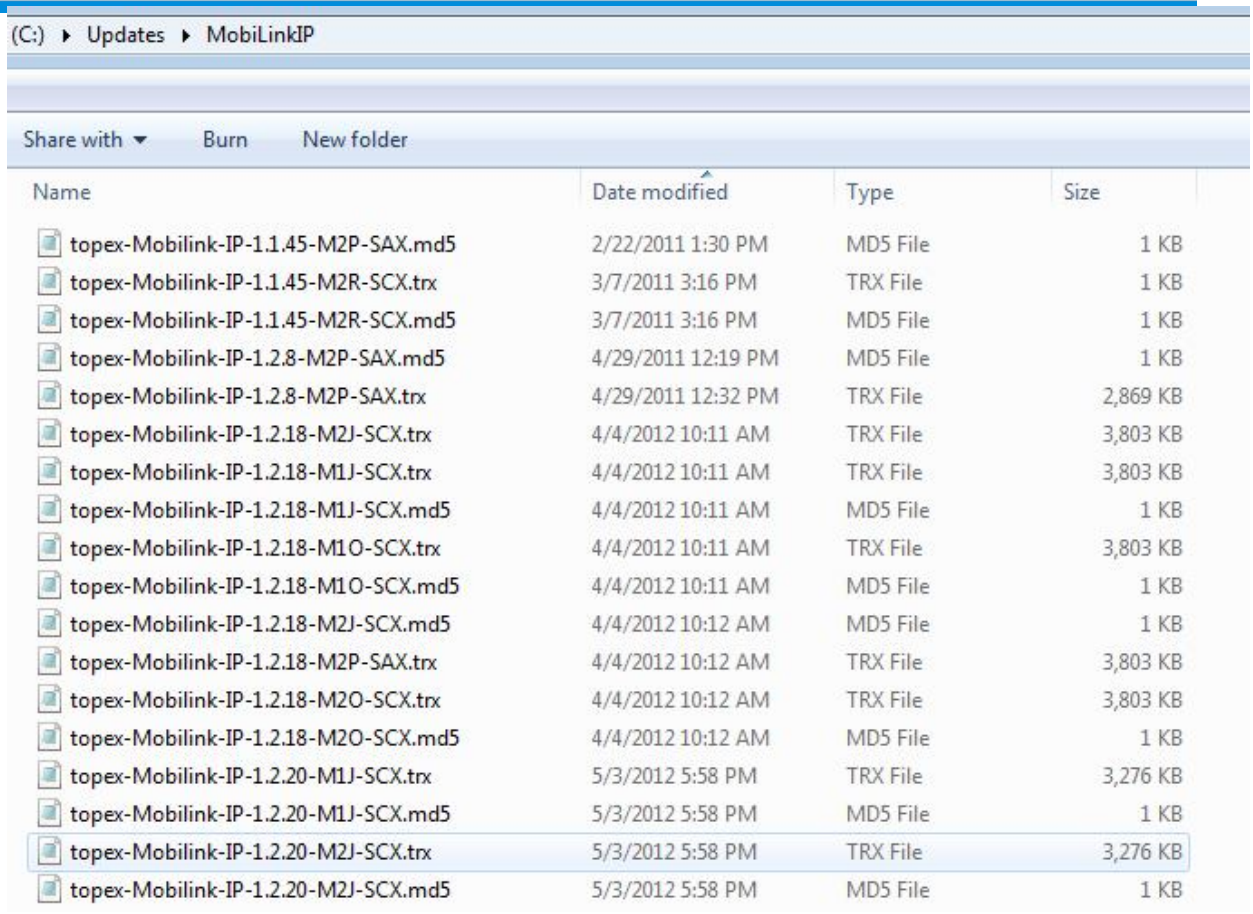


The update (firmware image) must be on your desktop PC or notebook.
The image files are binaries that have the extension “trx”.

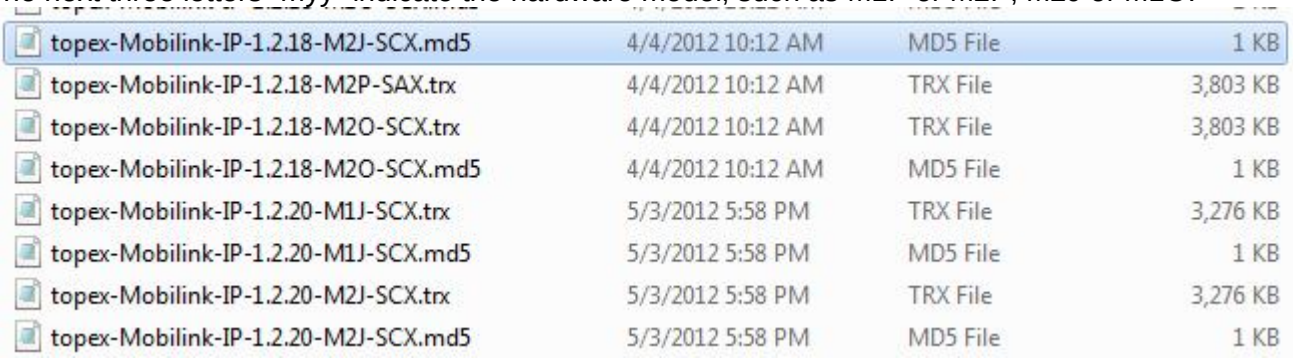
One may download the image files from the R&S TOPEX S.A. website.
The update files are called “topex-equipment-1.2.3- myy-sxx.trx”, such as:

Mobilink-IP-1.2.20-M2J-SAX or **Mobilink-IP-1.2.21-M2J-SCX**

where “equipment” is the name of the device, such as <<mobilink-ip>>, in the case of MobiLink IP, and 1.2.3. is the version number, for instance 1.2.18 or 1.2.21 below:



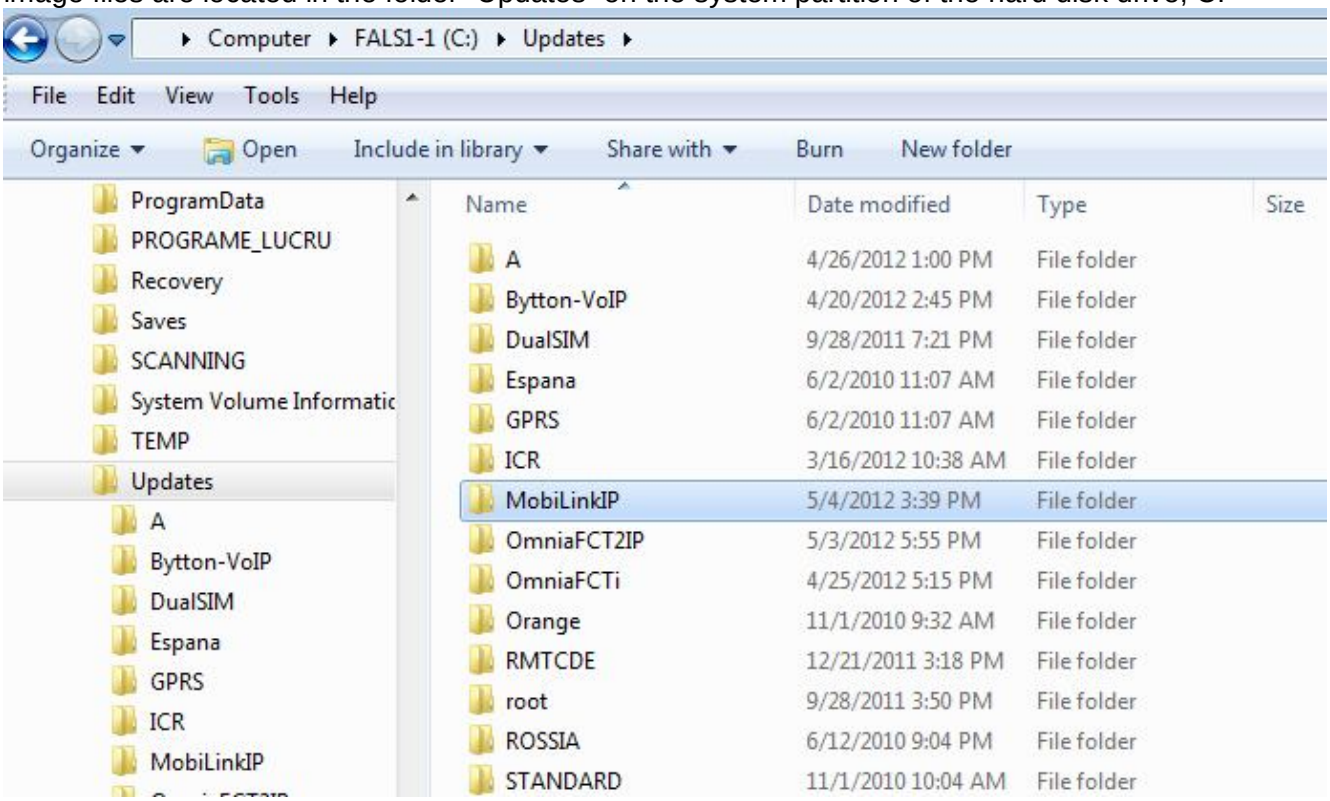
The next three letters “myy” indicate the hardware model, such as M1P or M2P, M2J or M1O:



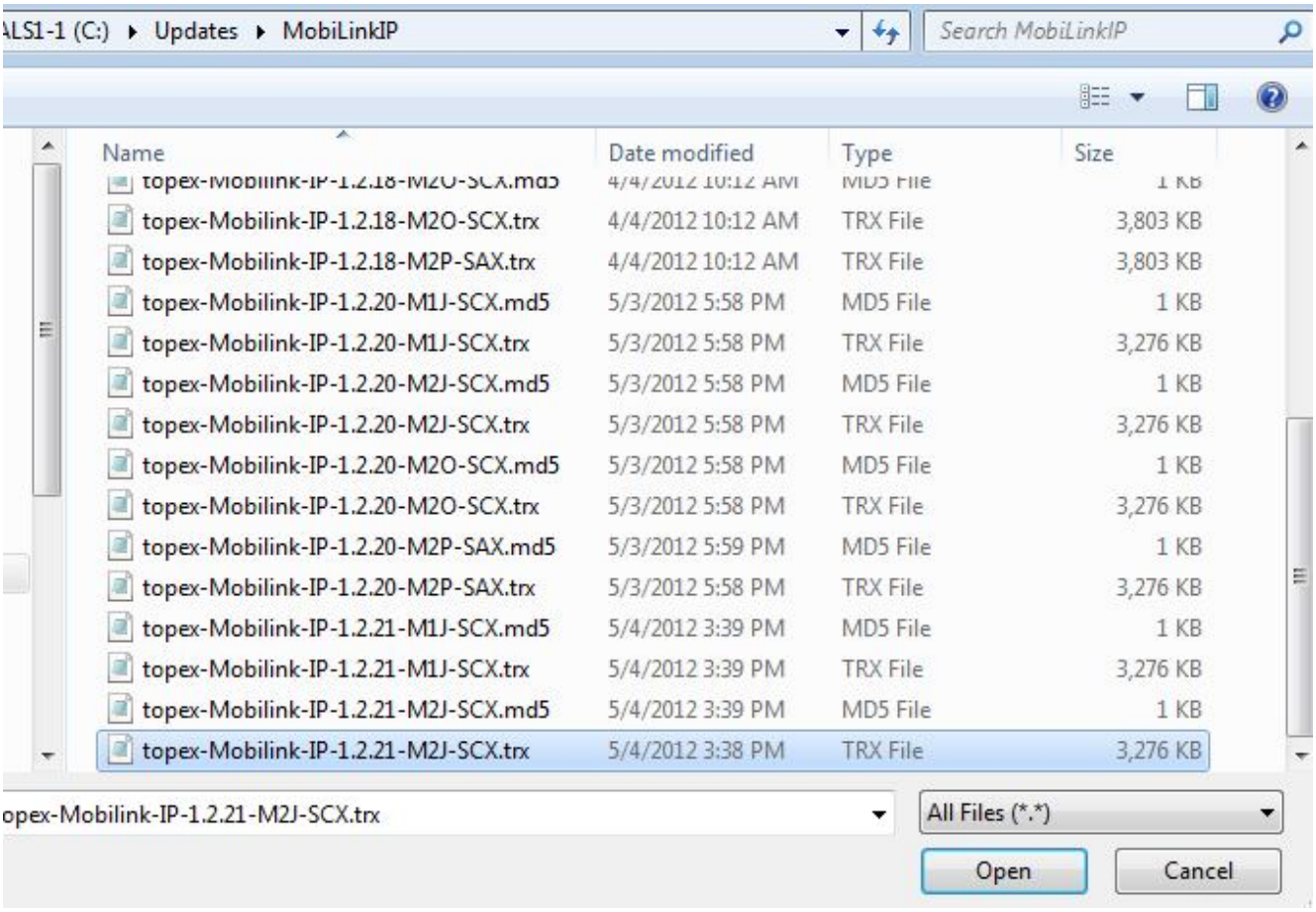
These are very important, because you must always load a firmware image which corresponds to the type of your equipment – when you have a “M2J” box, *you must update with an image type M2J, and not M2O or M1J!*

The three letters at the end, “sxx”, such as SAX, SCX or SFX define the software variant (special customized firmware for a particular application of the respective type of equipment).

Enter the name of the update or click Browse to search for it on the system. In the example below, the image files are located in the folder “Updates” on the system partition of the hard disk drive, C:

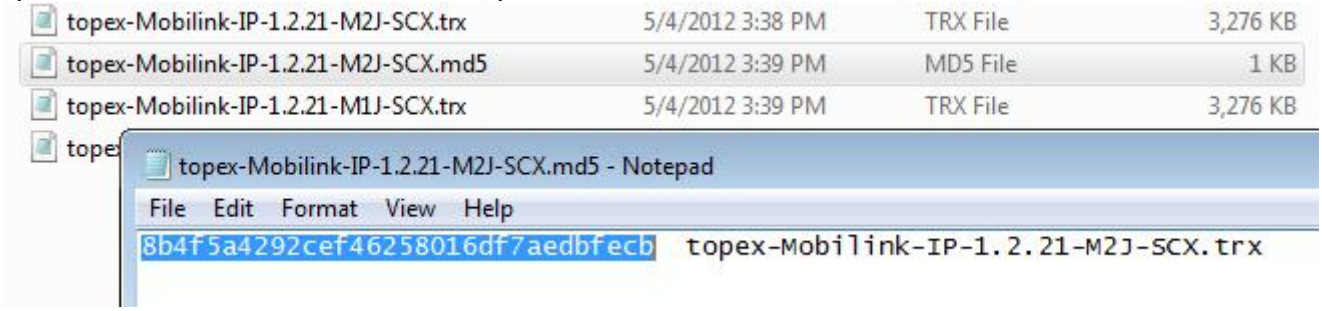


Select the sub-folder for MobiLink IP, choose the file needed and click Open.

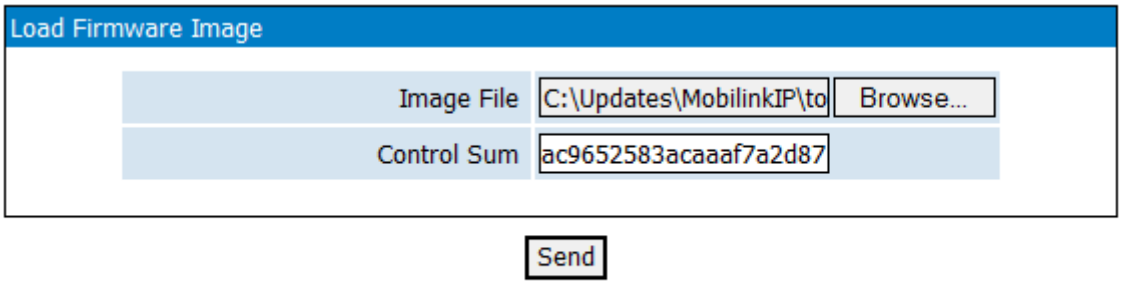


Note:
*Each firmware file has an associated **Control Sum.** The control sum is a string of hexadecimal figures, such as "f2209c63972be34f55d4e69d90042d93" and it is stored in a text file (with .txt or .md5 extension), with the same name as the firmware image. Using a control sum prevents the user from loading a corrupted image.*

Open the associated text file with the control sum, as shown below:
Open it with a text editor, such as Notepad:



copy the string of checksum from this file and paste it in the MobiLink IP web-page in the field named "Control Sum:

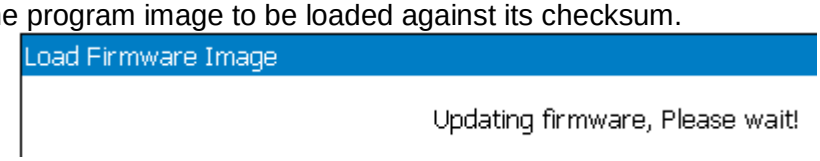


Finally, click the "Send" button to perform the update.
A "Firmware Update" window shows up, where progress can be seen with a progress indicator under the message "Updating firmware, please wait!"



Note that there are **two** distinct, successive phases of updating the firmware image:

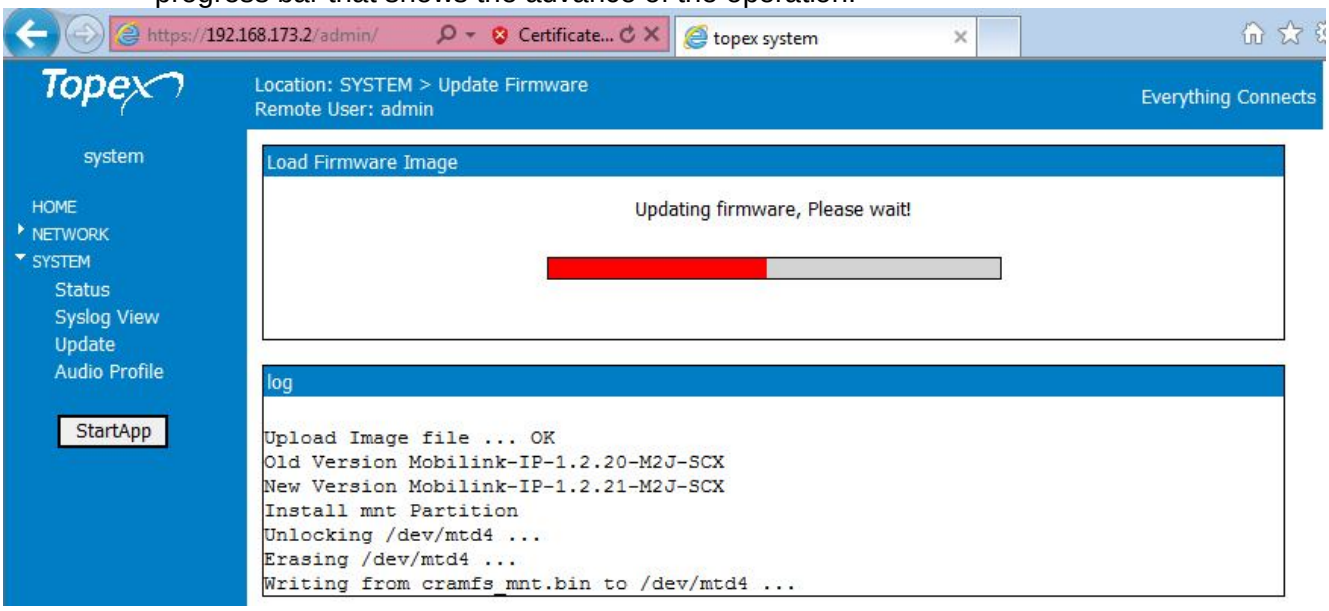
- in the first one, while the message "Updating firmware" is blinking, the equipment just checks the program image to be loaded against its checksum.



- if the result of the verification is wrong … nothing happens!

The incorrect firmware images is NOT loaded, you must try again, being more careful.

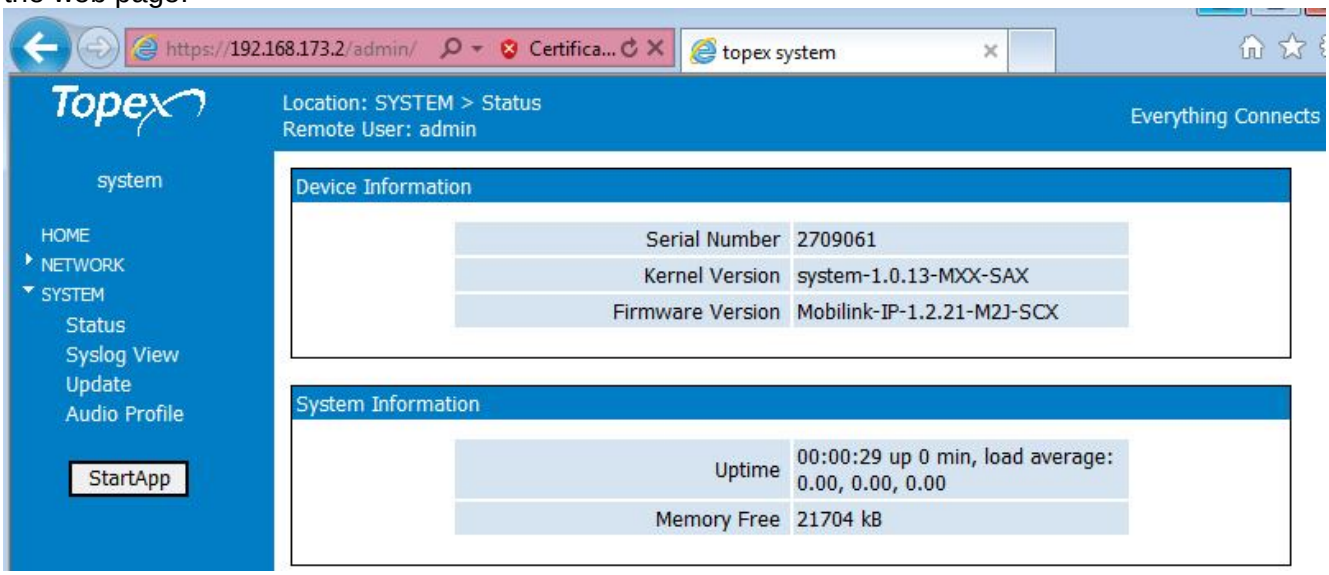
- when the result of the verification is OK, the MobiLinkIP device goes to the second phase where it actually loads the new firmware into its Flash memory.
  The message "Updating firmware, Please wait!" is the same, but now you can see a red progress bar that shows the advance of the operation:



The update log shows every step of the update process: install partition, unlocking, erasing, writing …. Among other information, it displays the previous firmware version and the new one, such as 1.2.20 and respectively 1.2.21 in the example above.

After the loading of the new firmware is completed, you can restart the MobiLink IP equipment to start it operating with the new software.

For this, you may use the "**StartApp**" button located at the button of the system menu, at the left of the web page.

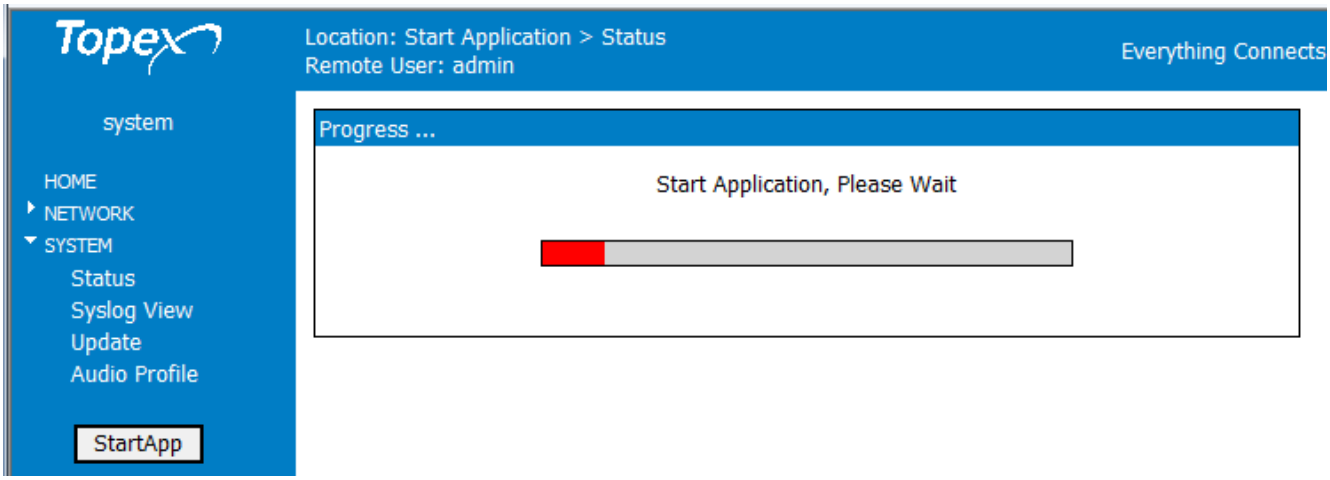


As an alternative, you can perform a hardware “Return to factory defaults” by keeping the RST button pressed when you power up the equipment.

However, this is not recommended, because this way the IP address of MobiLink IP returns to the default 192.168.173.1 – if you have changed it, you will “loose” the address of your MobiLink equipment!

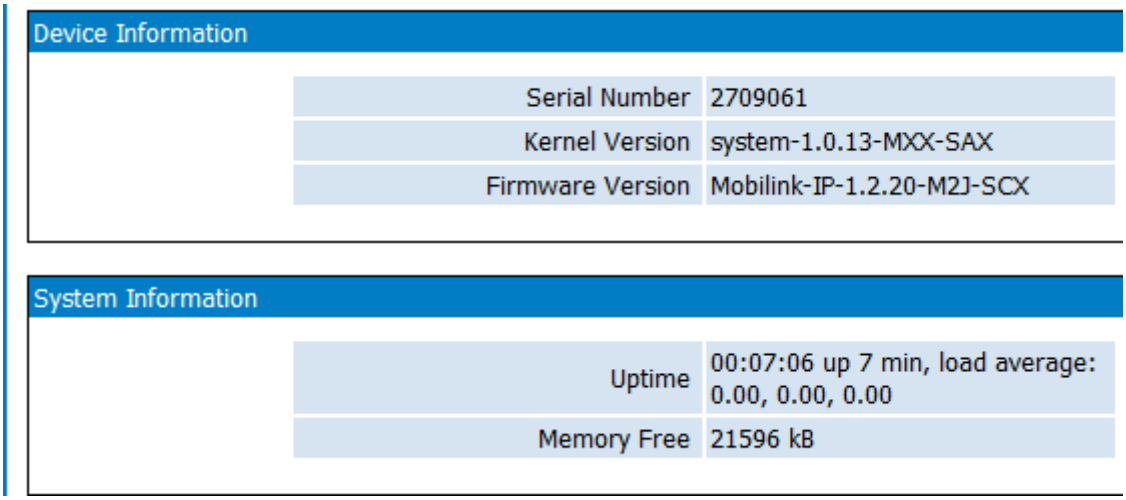
The StartApp button will start up the main application software running on MobiLink IP, which allows it to perform as a VoIP to Mobile gateway.

The message displayed above the red progress bar will be ”Start Application, please Wait”:



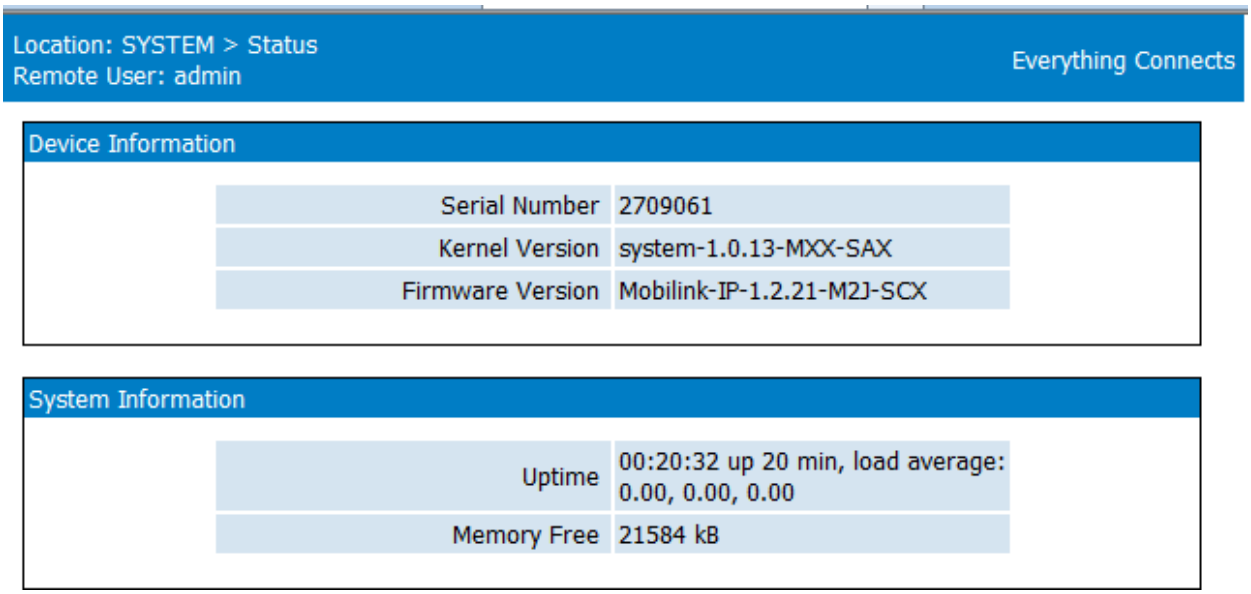
To verify the updating of the firmware, you can compare the System Status screen before and after loading the software image:

Before:

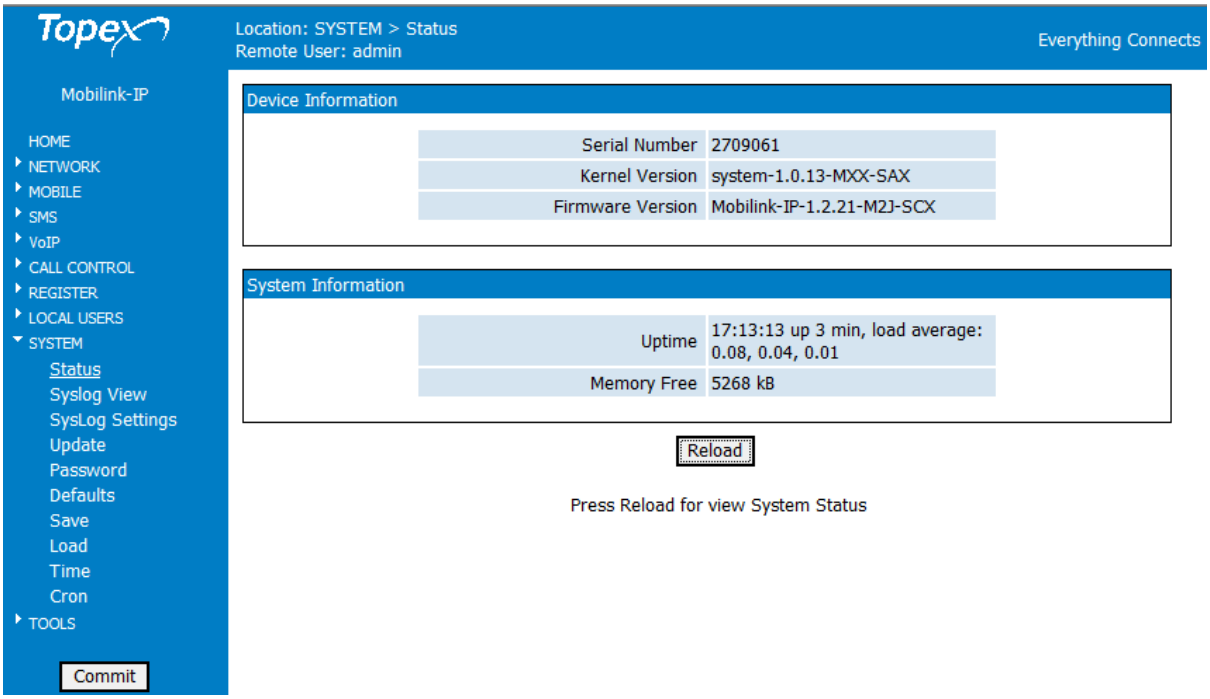


After successful update:

- upgrade to version 1.2.21, main application not yet running. Press the “Start App button”:



- upgrade to version 1.2.21, the main application is now running. You can see the full options of the Menu, and the value shown for the free memory is smaller:



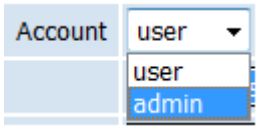
Warning: *Do not update the firmware unless there are problems with the MobiLinkIP gateway or the new firmware has a feature that you need. Remember to backup the current configuration first. Be careful when loading an update file. If selecting a wrong file, or if for different reasons firmware upgrading fails, the equipment may no longer operate correctly. A special firmware restore will have to be performed.*

To avoid this, follow the rules carefully:

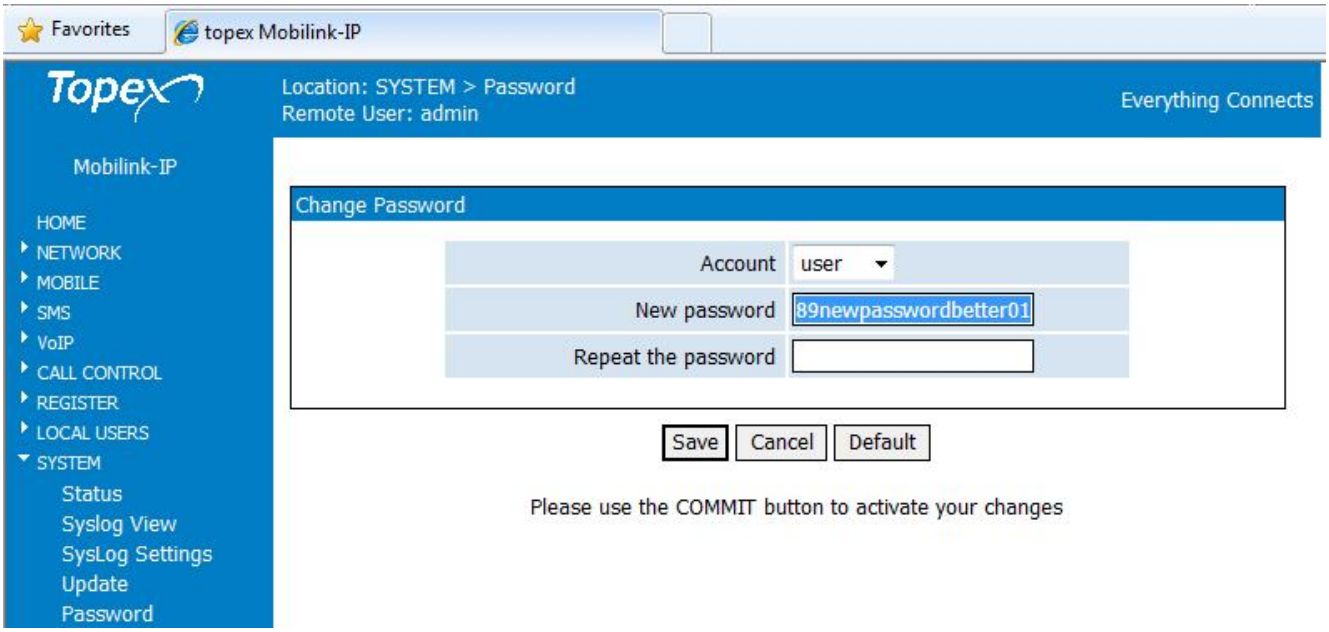
- don't turn off the MobiLinkIP equipment or the computer while the firmware is being overwritten;
- remember the equipment does not work while firmware update is in progress;
- after successful updating, verify the upgraded firmware;
- remember that updating the firmware on the MobiLinkIP could cause some or all of the configuration settings to be lost, depending on the degree of change in the firmware.
  Therefore it is highly recommended to **save** the current configuration before updating, and then restore it. To backup the settings, perform a Save, update the firmware, and then load the saved settings, after having the equipment operating with the updated firmware.

6.10.5 Password

Allows the modification of passwords for the log-in accounts, in this case "admin".
First of all, use the "Account" drop list to choose for which account do you want to change the password, for user (who has access only to the SMS page) or for admin, the Administrator account.



For changing the "admin" account password, the user must be logged in as admin.
Type the new password and enter it again on the second row to confirm it.



"Save" saves the new password.

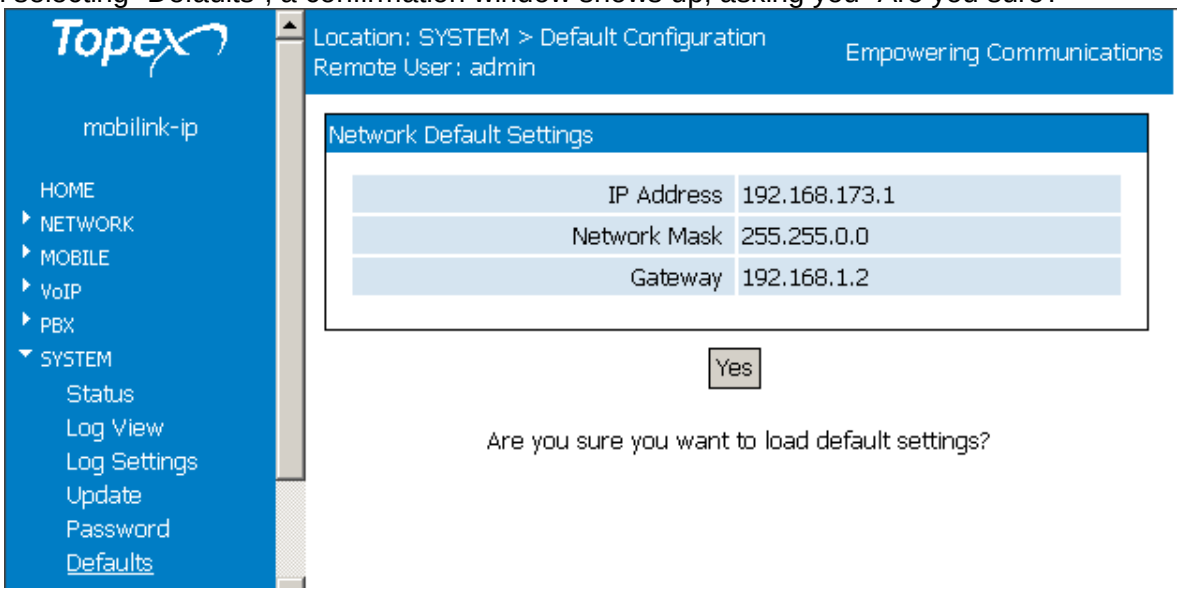
Replace the default passwords for user (99user11) and respectively Administrator (99admin11) with specific (of your own) as soon as possible.

Please choose a password with a **minimum** of six characters. In order to effectively prevent unauthorized access, the password must be long enough and include both letters and numbers.
Note that the password is **case-sensitive**.

6.10.6 Default Configuration

This option restores **all** the system settings to factory defaults. One can also click Default on each page to reset the respective parameters to default, but this function restores the whole device to factory default at once.

When selecting “Defaults”, a confirmation window shows up, asking you “Are you sure?”



If wanting to proceed, click the YES button and the equipment will revert to the factory default settings.
Following a reset, it will start operating with the factory default values for all parameters.

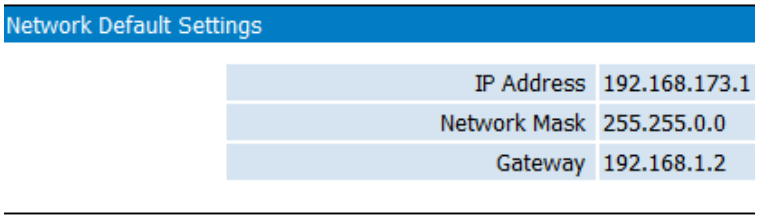
During the process, “Updating settings, please wait!” and a red progress bar, can be seen as shown below:



CAUTION!
Use this option carefully. During the process, the MobiLinkIP will not be available for VoIP, call routing and connecting to the mobile network. For a few moments, the LAN icon in the status bar will be barred with a red “x” and the message “A network cable is unplugged” will show up, indicating that MobiLinkIP is unavailable.

Network Default Settings

This area is not editable, it just shows you the default network parameters (IP address, net mask and gateway). Thus you will know the parameters required for connection, after restoring the equipment to factory defaults.



Hardware factory defaults

"Return to Defaults" can also be performed via **hardware**. This means the Web interface doesn't have to be used.
For this, perform the Hardware reset described previously:
Remember, you must follow the procedure described next, simply pressing the recessed RST button once, or keeping it depressed for a very long time won't work!
So you must follow these steps:

- shut down the MobiLinkIP device (unplug the power jack)
- press the RST button and keep it pressed
- power up MobiLinkIP
- wait until all three LEDs light up in red color , then leave the RST button.

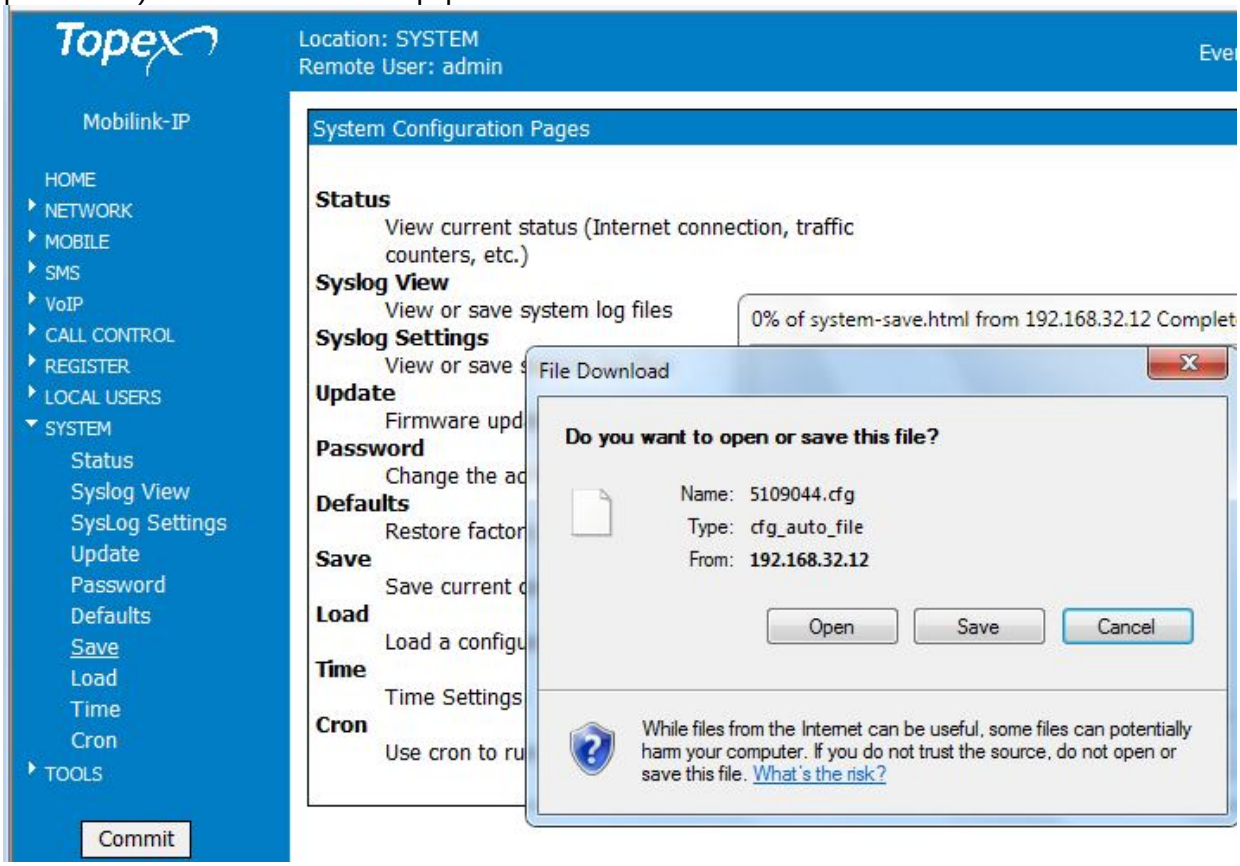
Now the equipment performs a reset with return to factory default settings.
This does NOT happed if you don't follow exactly the procedure described above – for instance, if you continue to press RST after the three indicators have turned on in red color!

This way of restoring the factory default settings is faster than using the web interface, but the same care should be exercised.

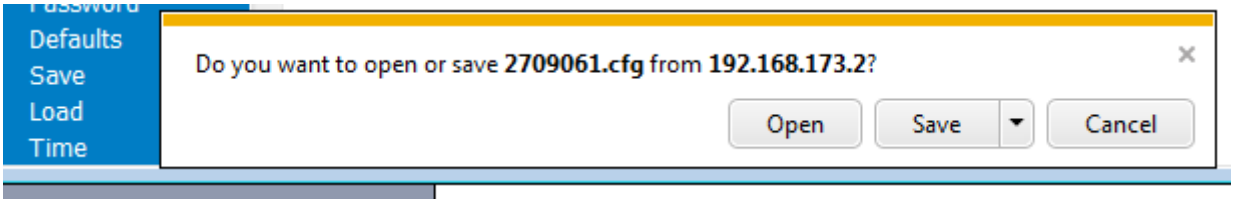
Note: T*he "Return to Defaults" option is quite useful when incorrect settings have been performed or when the IP of the MobiLinkIP device are forgotten. If not having the IP address or if having incorrect settings for iptables, one won't be able to connect to the VoIP2Mobile to administer it.*
Perform a hardware "factory defaults", and MobiLinkIP will revert to its original settings, including the IP address of ***192.168.173.1***

6.10.7 Save

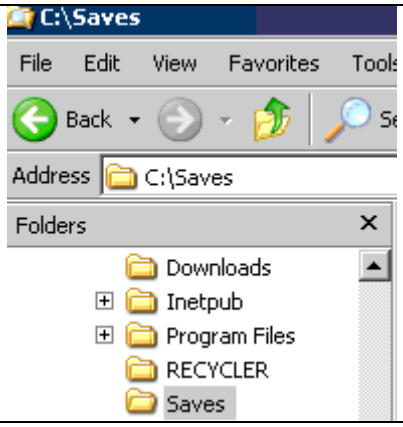
The “Save” option makes a backup copy of the current configuration (all the settings you have performed) of the MobiLinkIP equipment.

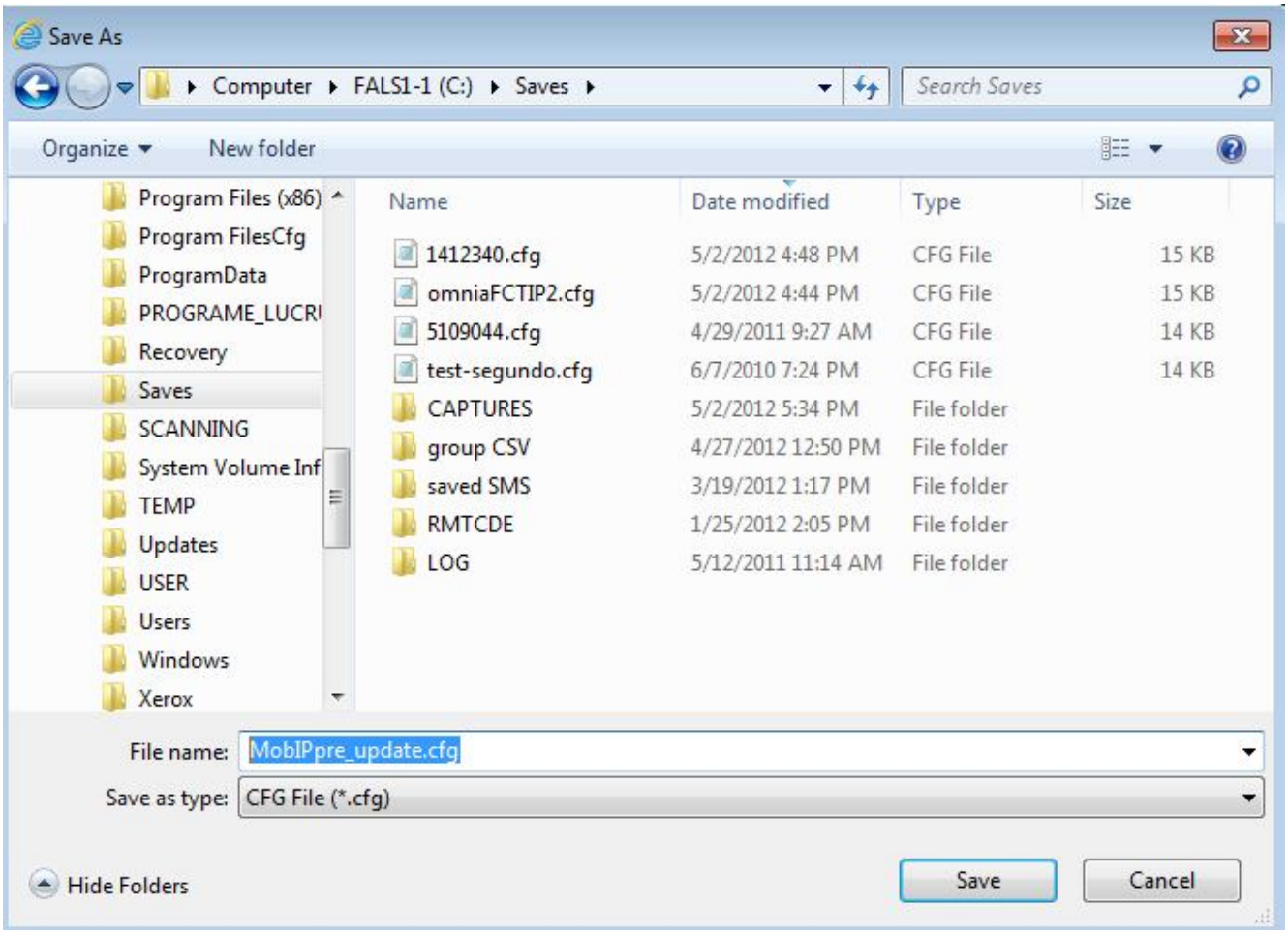


Or:

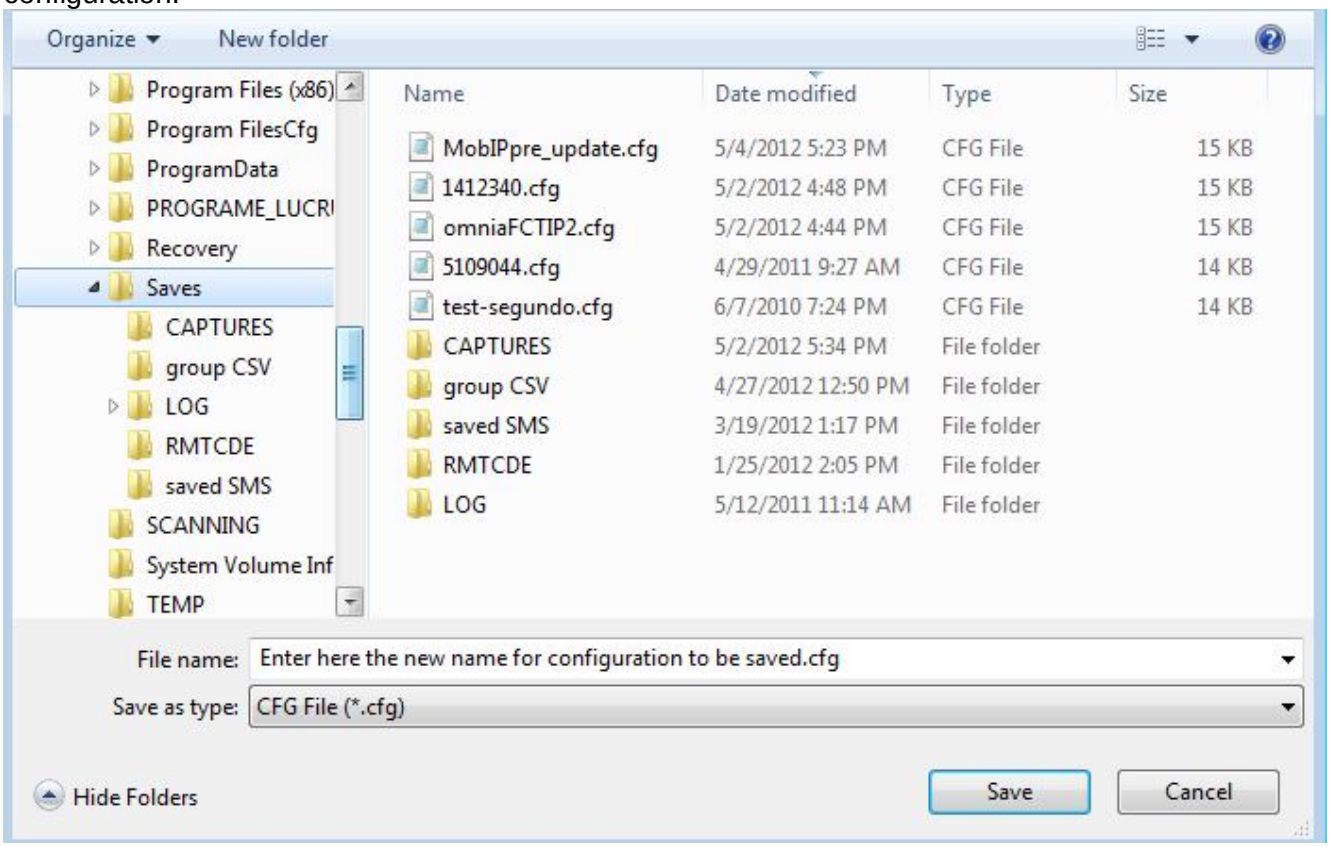


The configuration file is called “1234567.cfg”, where the number 1234567 is the serial number of the motherboard of MobiLink IP, such as 5109044 or 2709061 in the examples above.

Click the button “Save” to save the file with the current configuration of the MobiLinkIP One may select the folder where the configuration will be saved, in this case the folder Saves on the partition C: of the hard disk drive;	



also, one should change the default name “number.cfg” into a name meaningful for the actual configuration.



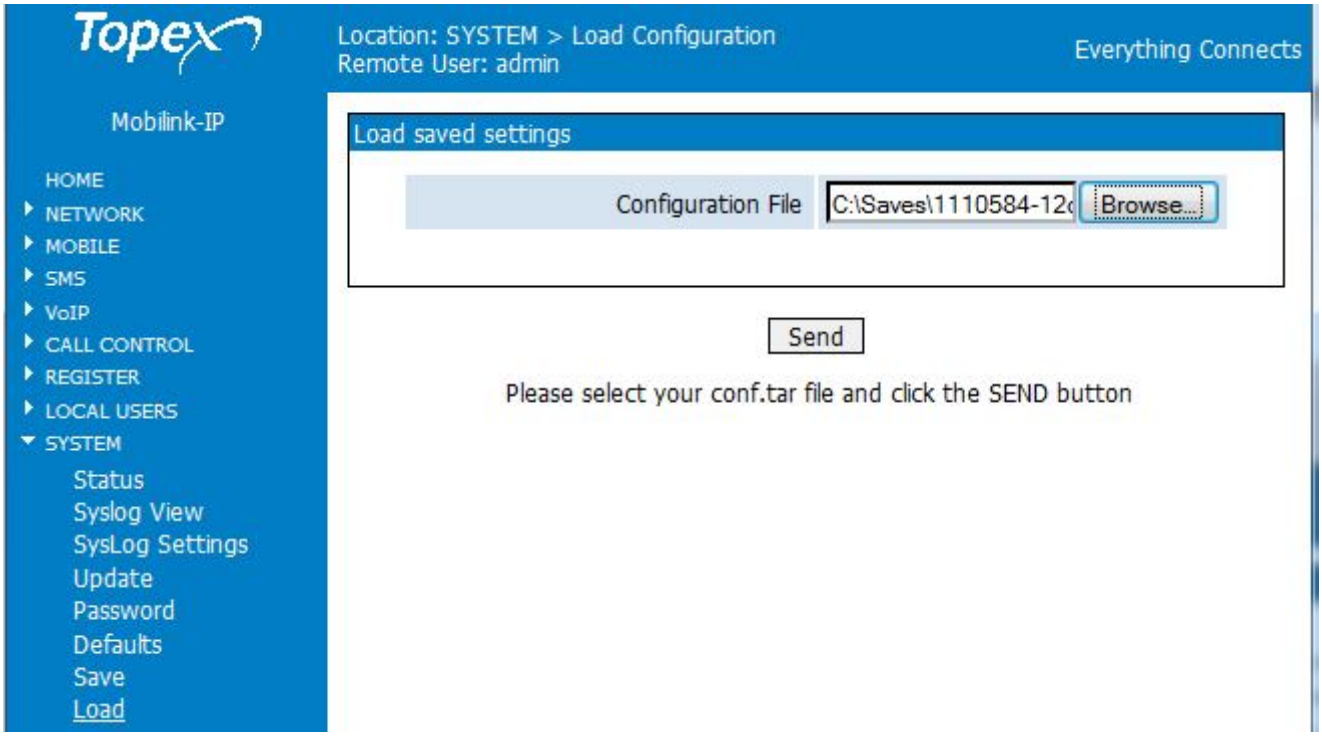
Note: *It is highly recommended to backup the configuration from time to time. This way the user can always load the saved configuration, if there is need.*
For instance, when performing a "Restore to factory defaults", all previous settings are lost. If the configuration was previously saved, it can be loaded back to perform changes.

Also, one should perform a "Save" before using "Update" to load a new software image, since the new firmware could erase some of the settings.

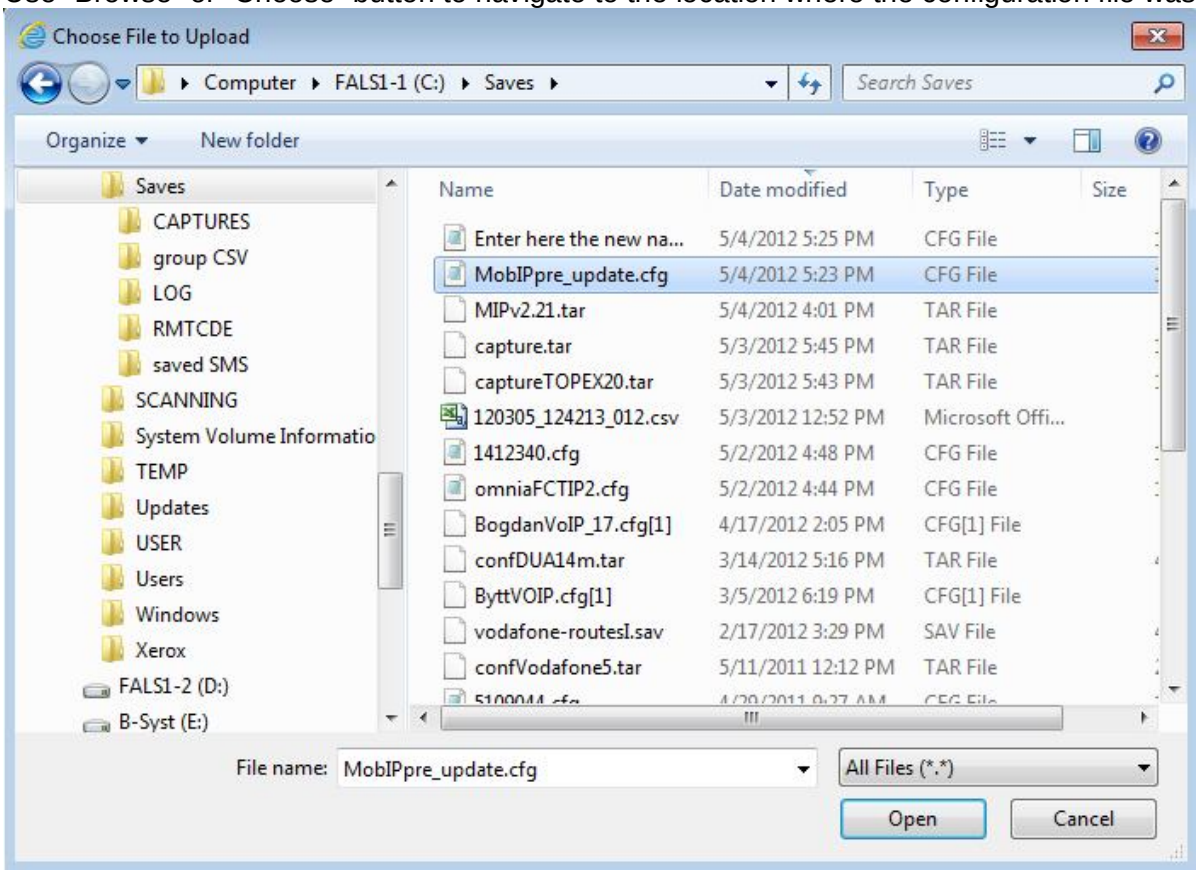
Such precautions are especially useful when you have configured many particular settings, for example related to routing rules, registration of mobile and SIP users or routing of incoming and outgoing calls – it will take a long time to add and edit all these specific settings by hand.

6.10.8 Load

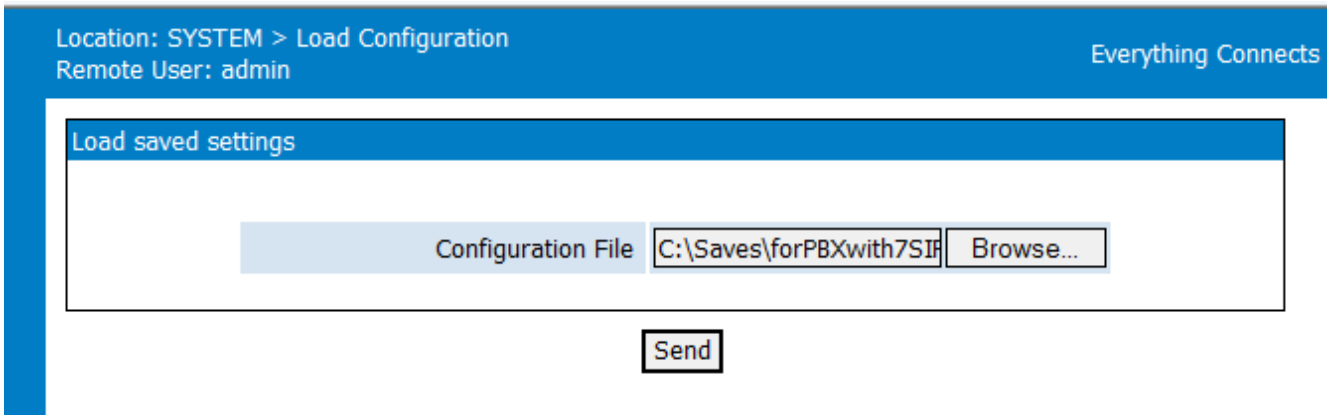
It loads a configuration file that has been saved previously or restores a backup.
This is the operation complimentary to "Save":



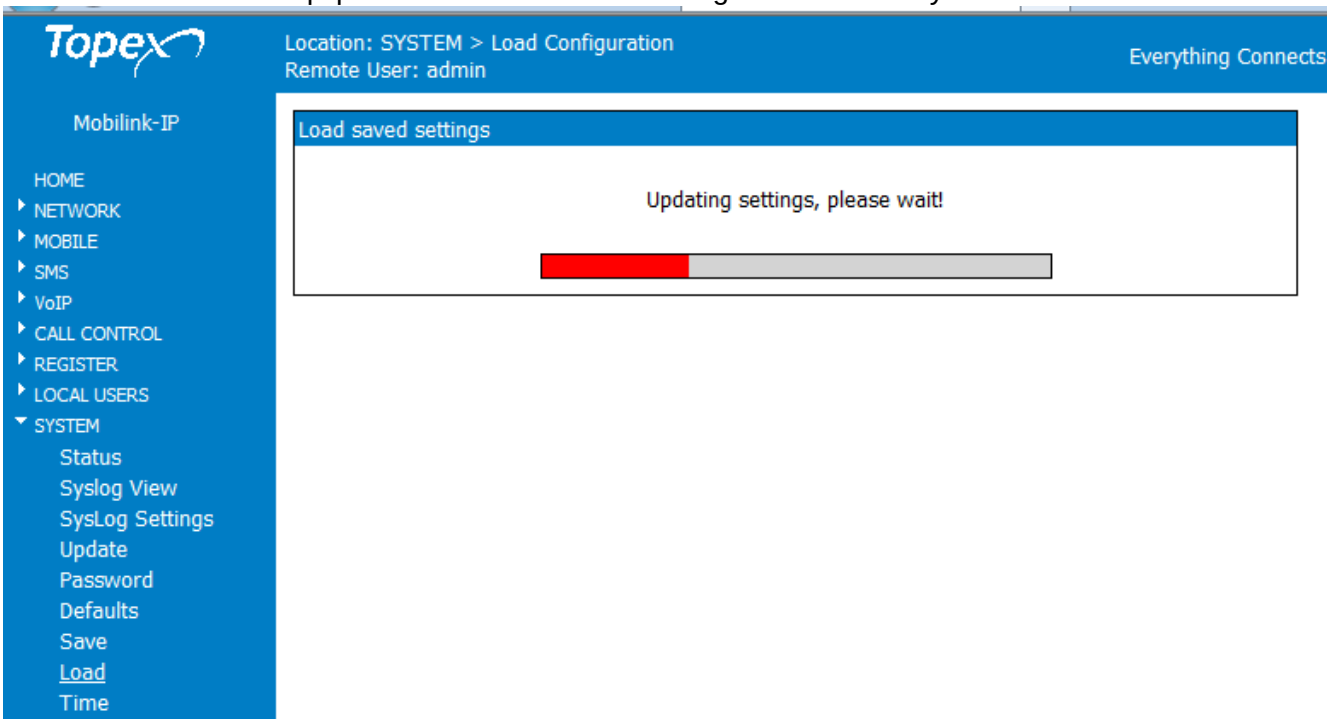
Use “Browse” or “Choose” button to navigate to the location where the configuration file was saved.



Press Open, choose the file, then click the button “Send” below it to send the file to the MobiLinkIP.



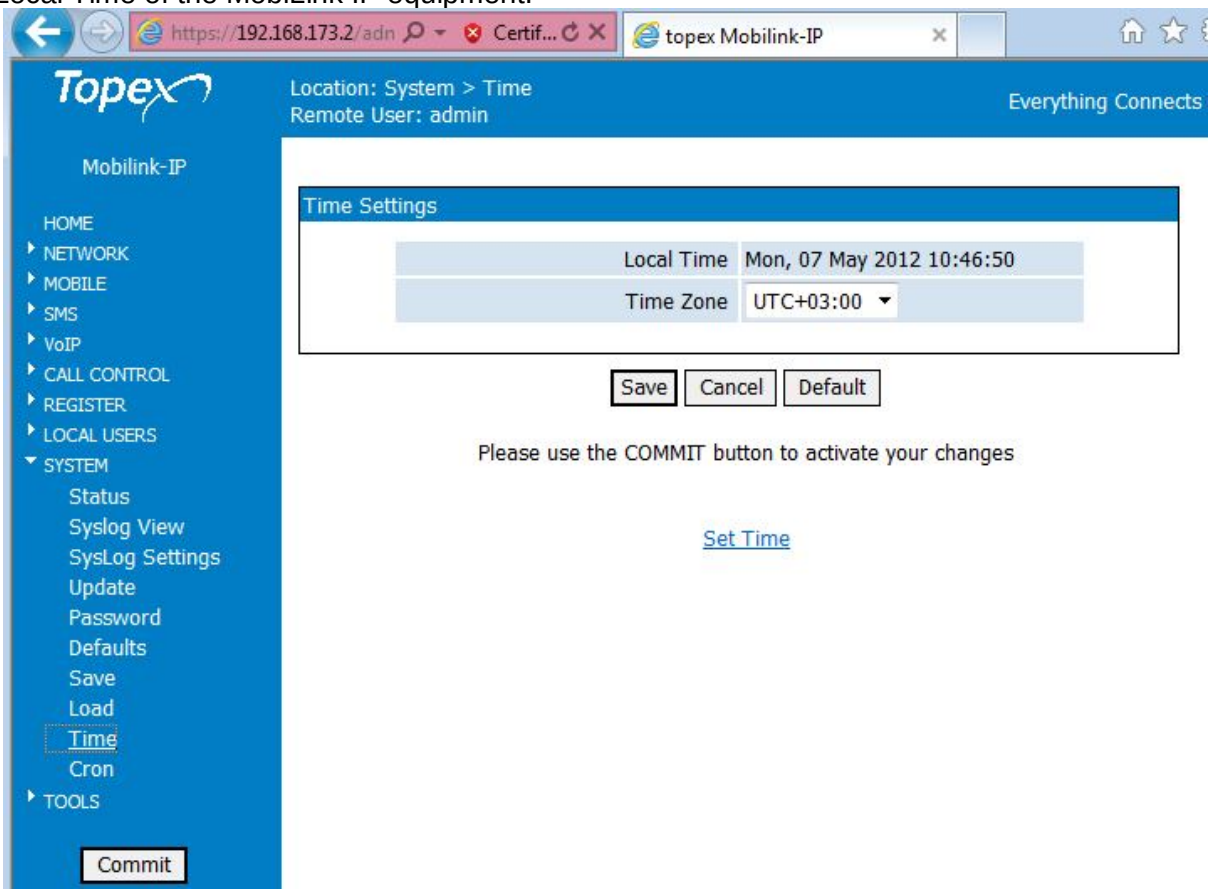
Now the MobiLink IP equipment starts to load the configuration file that you have selected:



First the message “Updating settings, please wait” will start to blink, and then a red progress, below the blinking message, shows the advancing of the load operation.

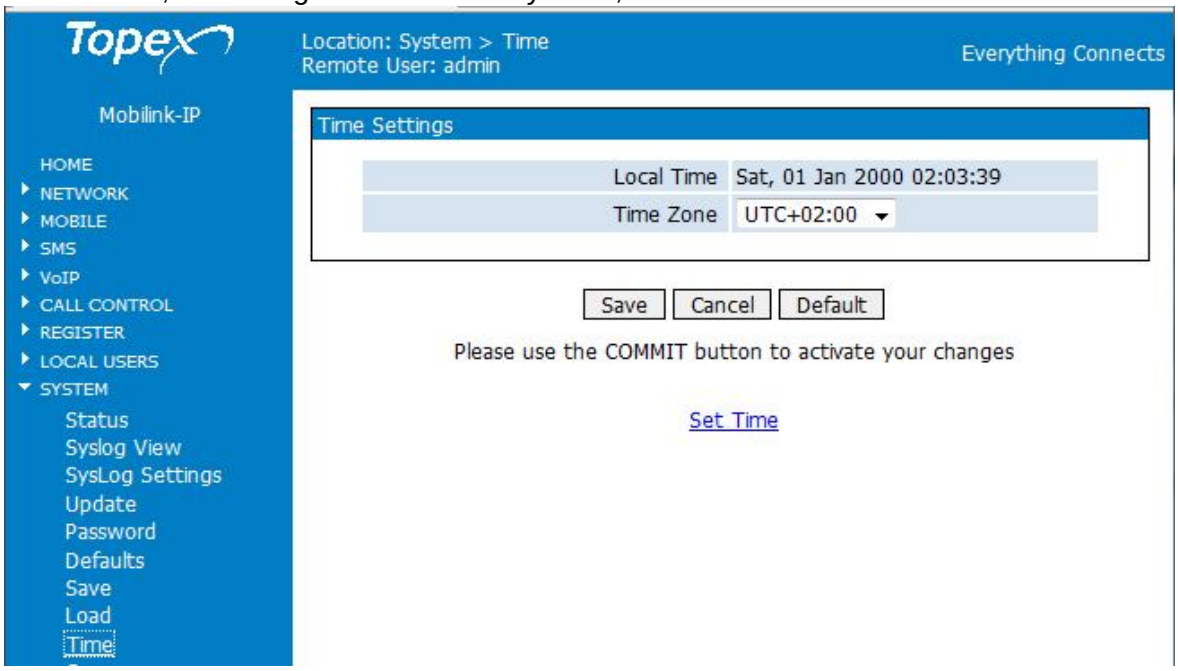
6.10.9 Time

The ‘time settings” page allows you to see the Local Time, choose the Time zone or manually set up the Local Time of the MobiLink IP equipment.

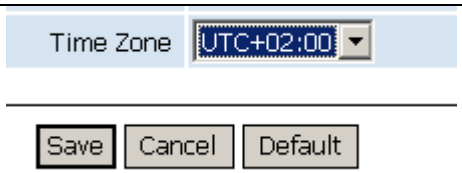


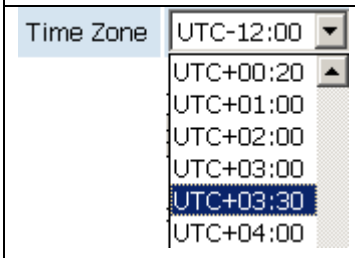
How to use:

The time / date, kept by the Real Time Clock of the equipment, is the one synchronized form the distant NTP servers, which provides UTC time (universal time, formerly called GMT).
In the example below, NTP synchronization has not been performed, so the time / date has reverted to the default time, which begins on 01 January 2000,00:00:



In practice, you must adjust this universal time to the actual time / date, taking into account the local time zone, which can be before or behind the UTC time (for instance in Romania the official time is normally set at two hours after UTC)



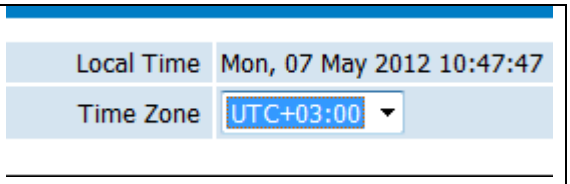


To adjust this, you have the "Time Zone" field.
It activates a drop list, you can choose instead of the default UTC-00:00 the value corresponding to **your** time zone, from UTC-12.00 up to UTC+14.00!

All time zones of the are available, including those with half hour or quarter hour increment!

Note:

As you can see in the current example, the time zone has been set to UTC+3. This is because in Romania, like in most of Europe, the Daylight saving time (Summer hour) is active. This means the time must be advanced with one hour compared to the normal time!





Please use the COMMIT button to activate your changes

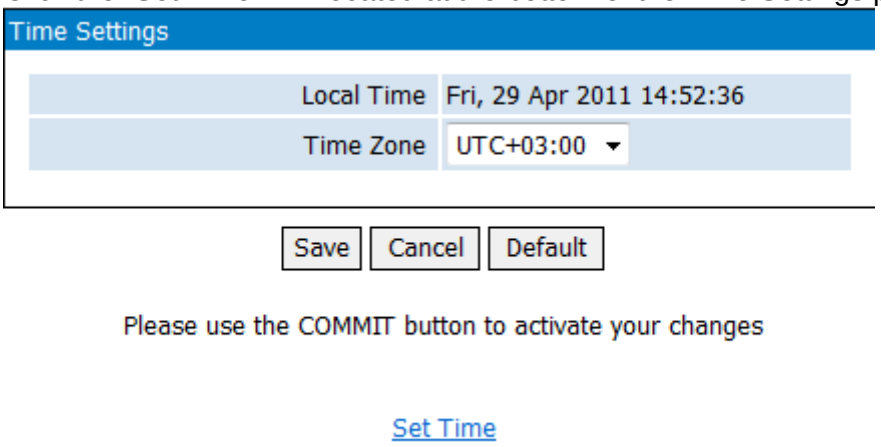
Don't forget to use Save and respectively Commit, to make permanent the change of time zone.
The new value will be active only after you press <u>Commit</u> and MobiLink IP restarts with the new settings!

In the example below you can see that, following the setting of time Zone to UTC + 03 : 00 and the reboot-ing of the equipment, now the value shown by "**Local time**" of MobiLink IP is identical to the "real" time, displayed by a PC or other machine featuring RTC:



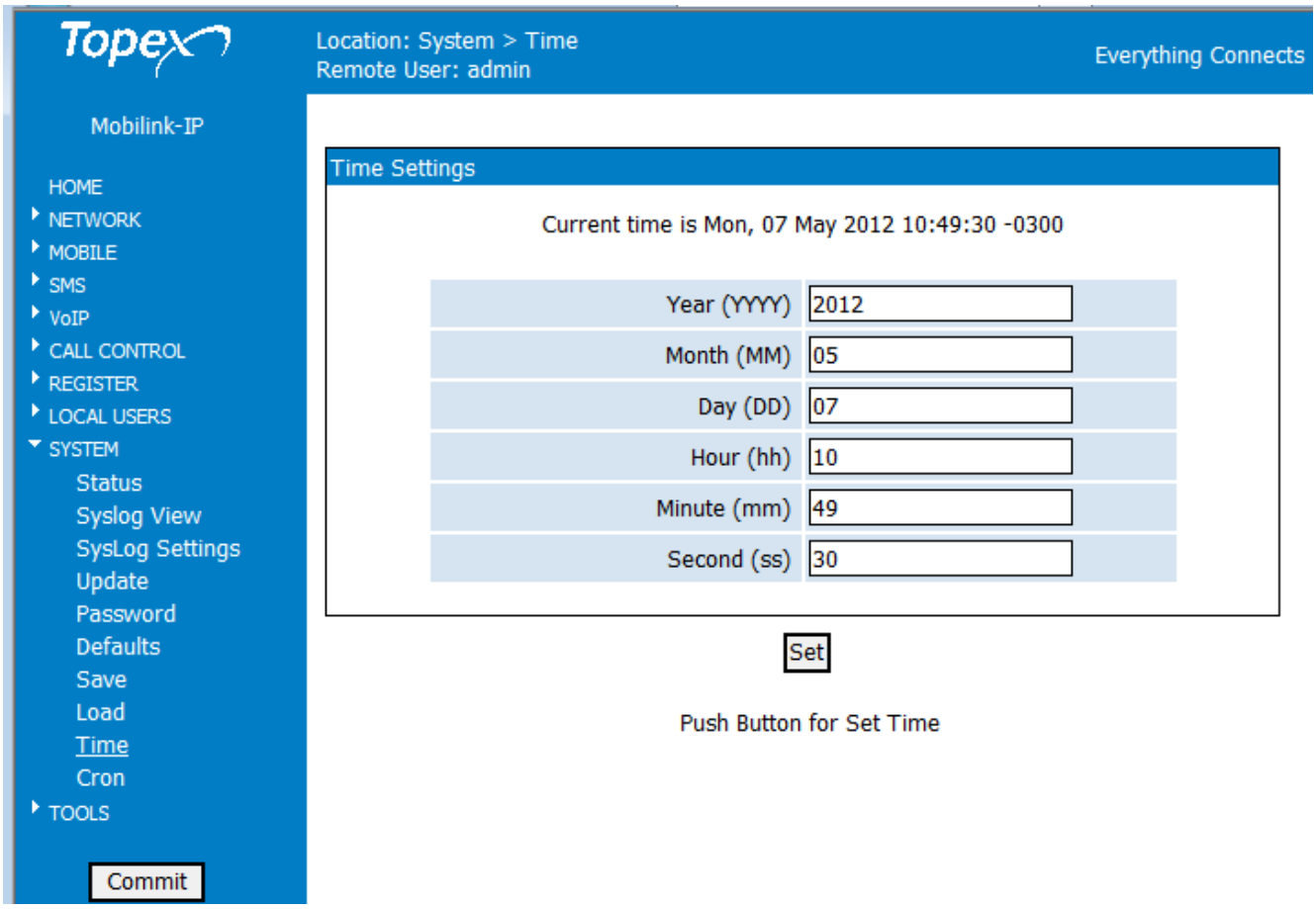
Set time

Click the “Set Time” link located at the bottom of the Time Settings page:

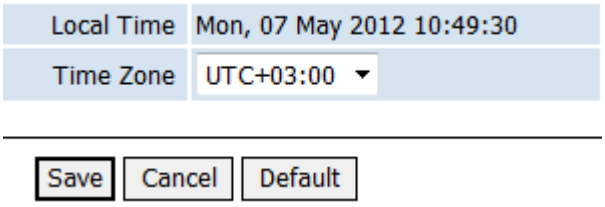


Clicking the “set Time” link gets you to a sub-page where you can *manually set up any date and time you want*, no matter which is the real time, provided by NTP servers or kept by the Real Time Clock of the equipment.

Here you can manually set any time (year-month-date, hours-minutes-seconds) that you want:



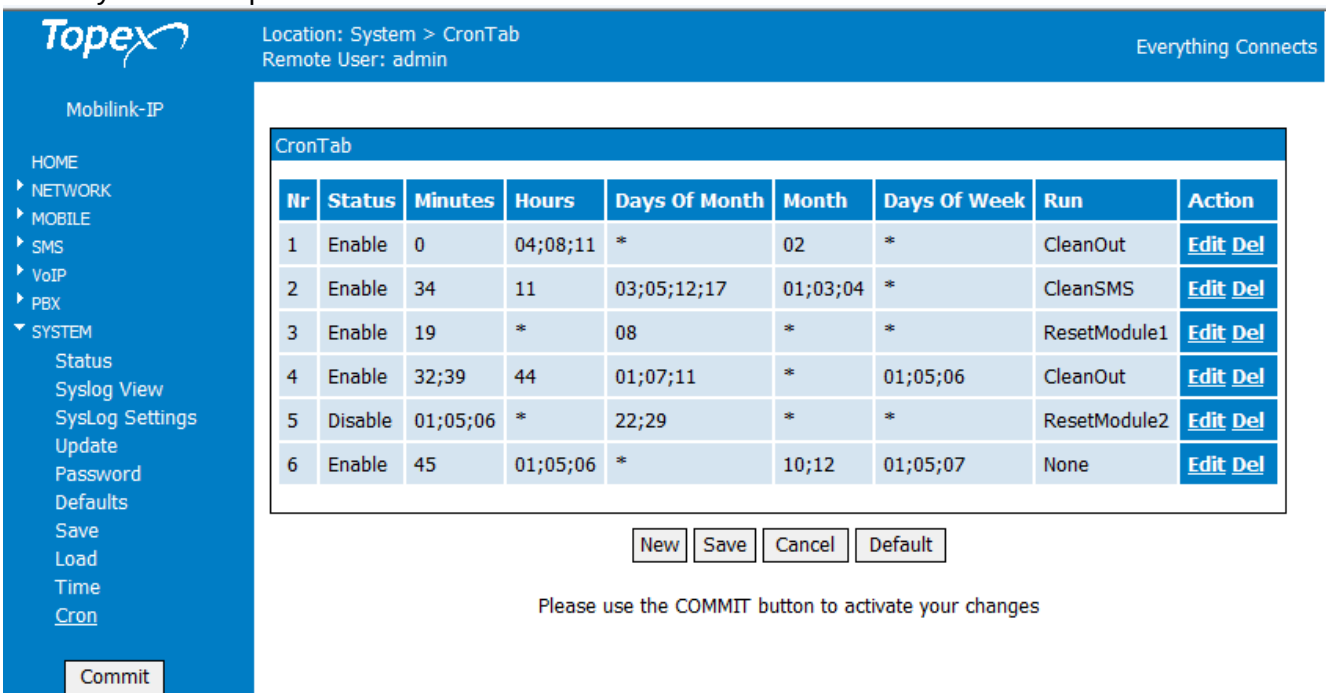
Immediately after pressing the Set button, the MobiLink IP equipment is already operating with the new time/date, there is no need to use **Commit**.



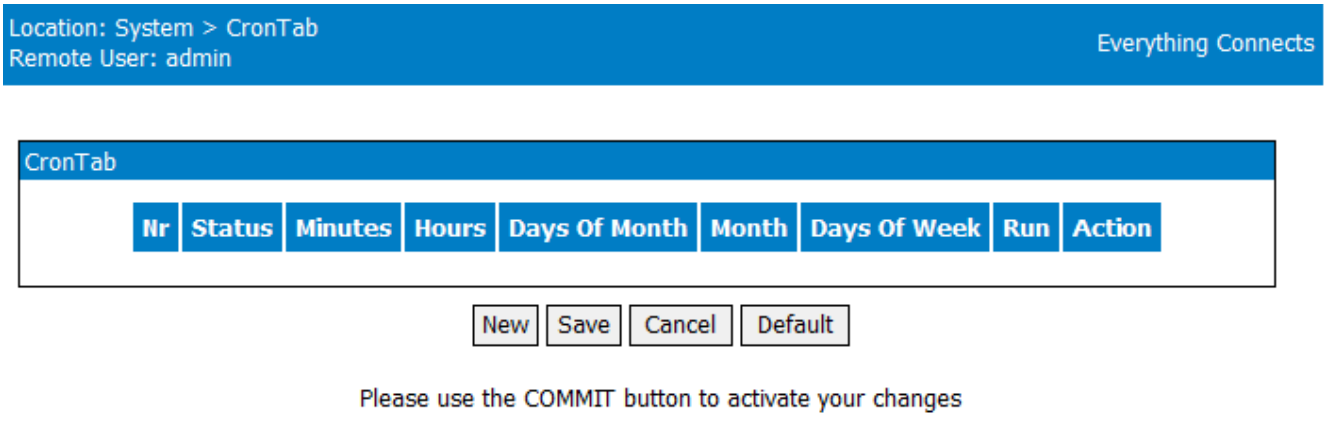
In fact, when you set manually the time and date and then perform other changes of other parameters for the MobiLink IP device, you must use Commit to save the modifications, the new time / date will be lost upon restarting of the equipment!

6.10.10 Cron

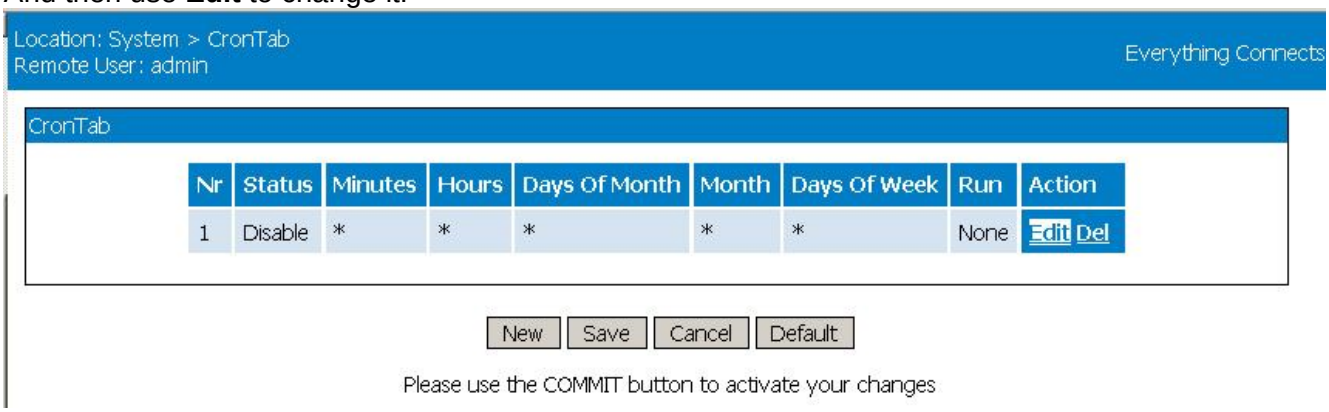
Allows you to set up entries in the *CronTab* table.



"Cron" is an Unix utility (Unix daemon) that executes at a specified time and date commands from a crontab file.
Cron is used to schedule some functions to be performed periodically, in this case to Clean Out the temporary files , clean the text messages or to reset one or both Mobile modules.
At first, all rows of the CronTab table are empty, you must use **New** and **Save** to create a new entry:



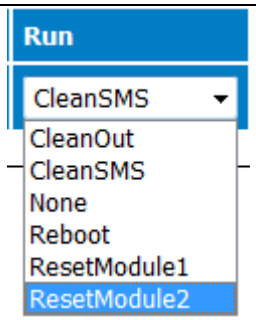
And then use **Edit** to change it:



Status – Enable or Disable. If an entry is set as Disable, it will not be active. You can define and save several entries, but activate them only when they are need.

Minutes This field controls what minute of the hour the command will run on, values are between '0' and '59'
Hours This controls what hour the command will run on, and is specified in the 24 hour clock format, values must be between 0 and 23 (0 is midnight)
dom This is the Day of Month, that you want the command run on, values from 1 up to 31. When you need to run a command on the 4th of each month, you should enter in this field the value 04.
month This is the month a specified command will run on, it may be specified numerically (0-12).
dow This is the Day of Week that you want a command to be run on, it must also be numeric (0-7)

Run This is the command that you want run at the respective moments. Default is **None**, which does … nothing!;
Currently you can use these commands:
- **CleanOut**, deletes the content of the OUT directory of the device (where there are stored the log files generated by the Capture option)
- **Reset Module** 1 or Reset Module 2, to reset a certain mobile module
- **Reboot**, to restart the equipment, or
- **CleanSMS**, deletes all received SMS to free the storage memory for new text messages.



You may enter several values, delimited by semicolon ;
By default, all fields are filled with a star, * , which means “any”.

A few examples:.
19 * * * * ResetModule1 - The command to reset module 1 will be run at the 19th minute past every hour
00 5 * * 5 ResetModule2 The command to reset module 2 will be run at 5 in the morning every Saturday
01 * 25 10 * ResetModule1 The command to reset module 1 will be run hourly on the 15th of October.

Notes:
- Under dow 0 and 7 are both Sunday.
- If both the dom and dow are specified, the command will be executed when **either** of the events happen.

For instance:
*** 10 22 * 1 Run**
Will run the command at ten o'clock in the morning Monday and every 22nd, and will produce the same result as both of these two entries put together would:
*** 10 22 * * Run**
*** 10 * * Run**

-The Cron of MobiLink IP also accepts numeric lists in the fields.
Lists can be in the form: 1;3;4 (meaning 1 and 3 and 4). Notice that the delimiter is a semicolon ";".

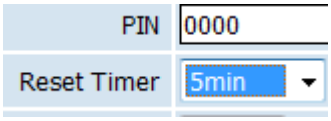
For instance

33 10 * * 1;2;3;4;5 Run
Will run the respective command at 10:33 every Monday, Tuesday, Wednesday, Thursday and Friday,

While

0 0 1;10;15 * * Run
Will run the respective command at midnight on the 1st ,10th & 15th of each month.

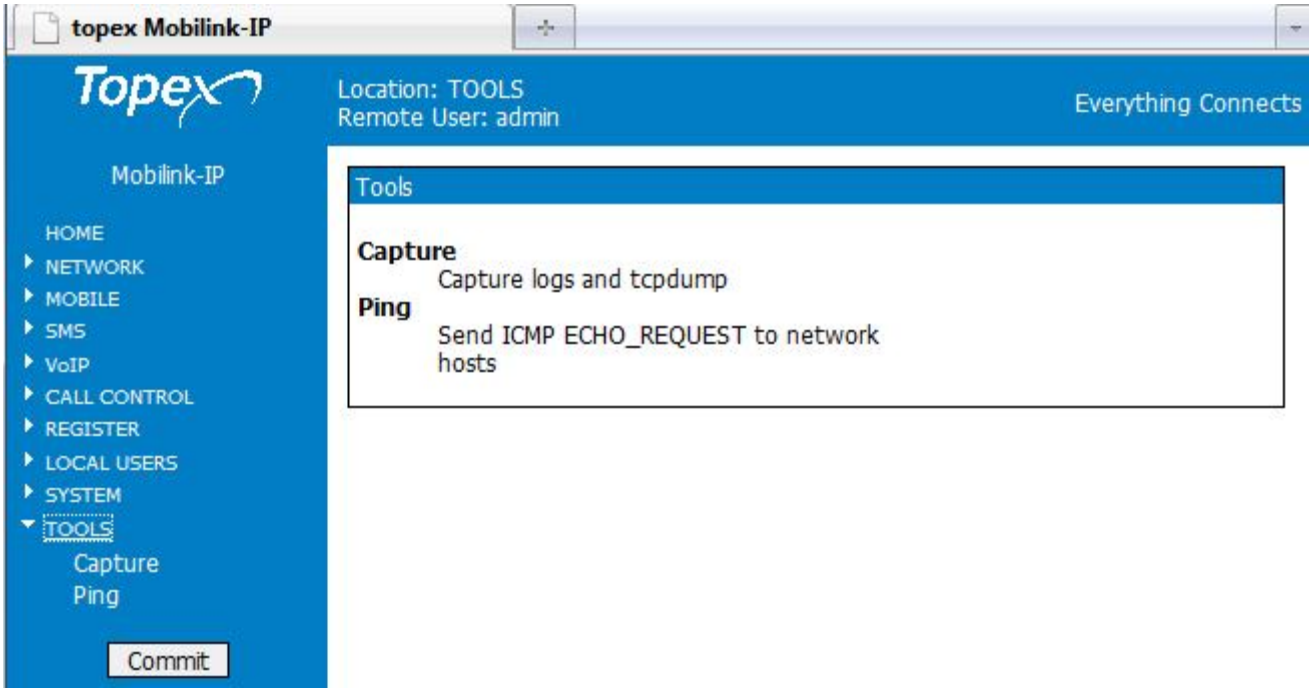
Frequently reset a module
If you need to reset a certain Mobile module every 5 minutes, for instance, the usage of Cron is quite difficult: you should write in the field "Minutes" **all** the respective values, such as: "00;05;10,15;20;25;30;35;40;45;50;55" – this is slow, cumbersome.
A better solution is to go to **Mobile>Settings** page and use More to reach the "Reset Timer" field, where you select out of the drop list the value "5min" to make the respective mobile module to be resetted every five minutes!



The command "**None**" … does nothing at the specified time / date of Cron tab!
You can use this option, to define and save several hours and dates, but no action will be in fact taken, until you replace in the filed Run the option <<None>> with the one you really want to happen: CleanOut, Reboot, Reset Module 1, etc.

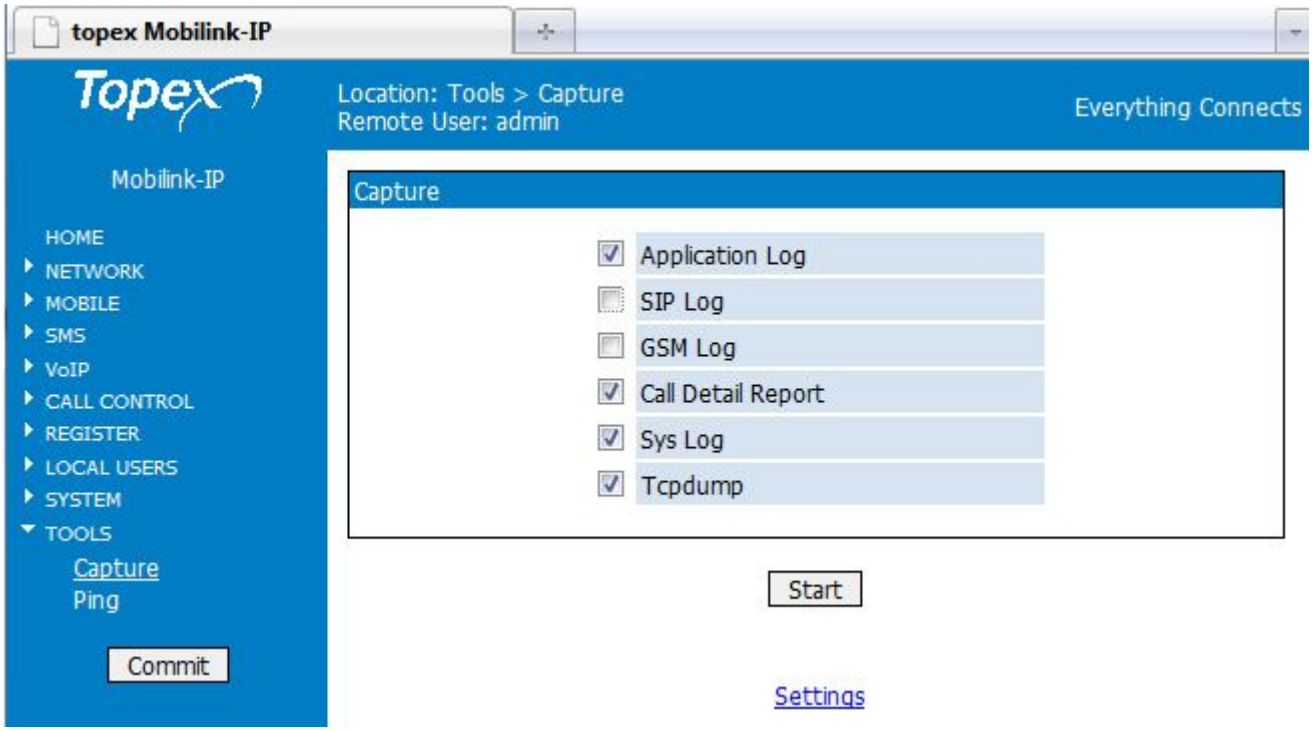
6.11 TOOLS

These are instruments or tools for advanced debugging of the equipment – they allow a specialist to capture and save detailed operation logs, check for network hosts, and so on.

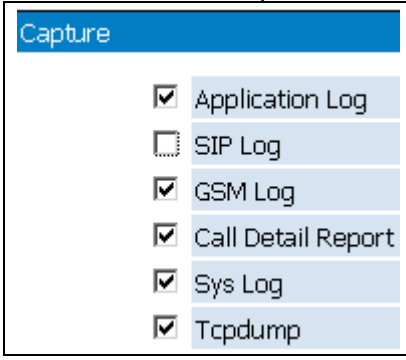


6.11.1 Capture

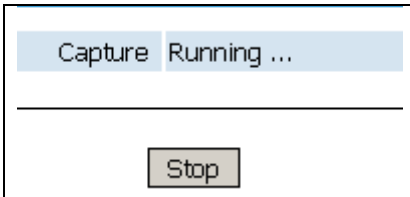
Captures logs, saves and downloads them and performs tcp dump.



How to use the Capture tool:



First, you should mark the checkboxes for the log items that you want to be included in the capture (logs for Application, System, SIP, Mobile, Call Detail Records, etc.) then you press Start to begin capture.



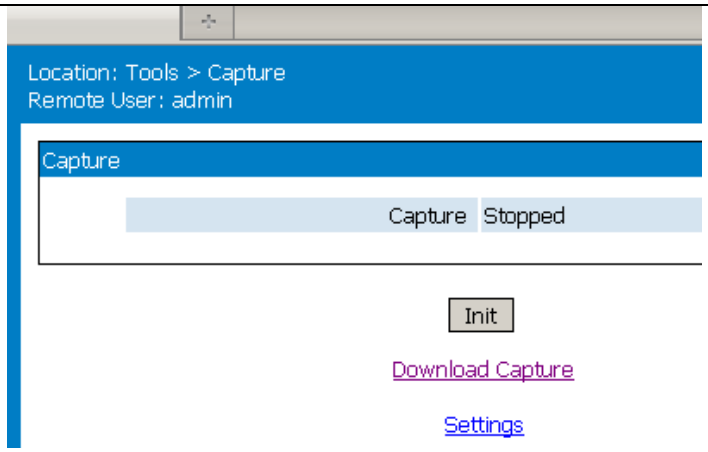
The screen now shows the message “capture Running …” and the name of the button changes to Stop.

Click it to stop the capture.

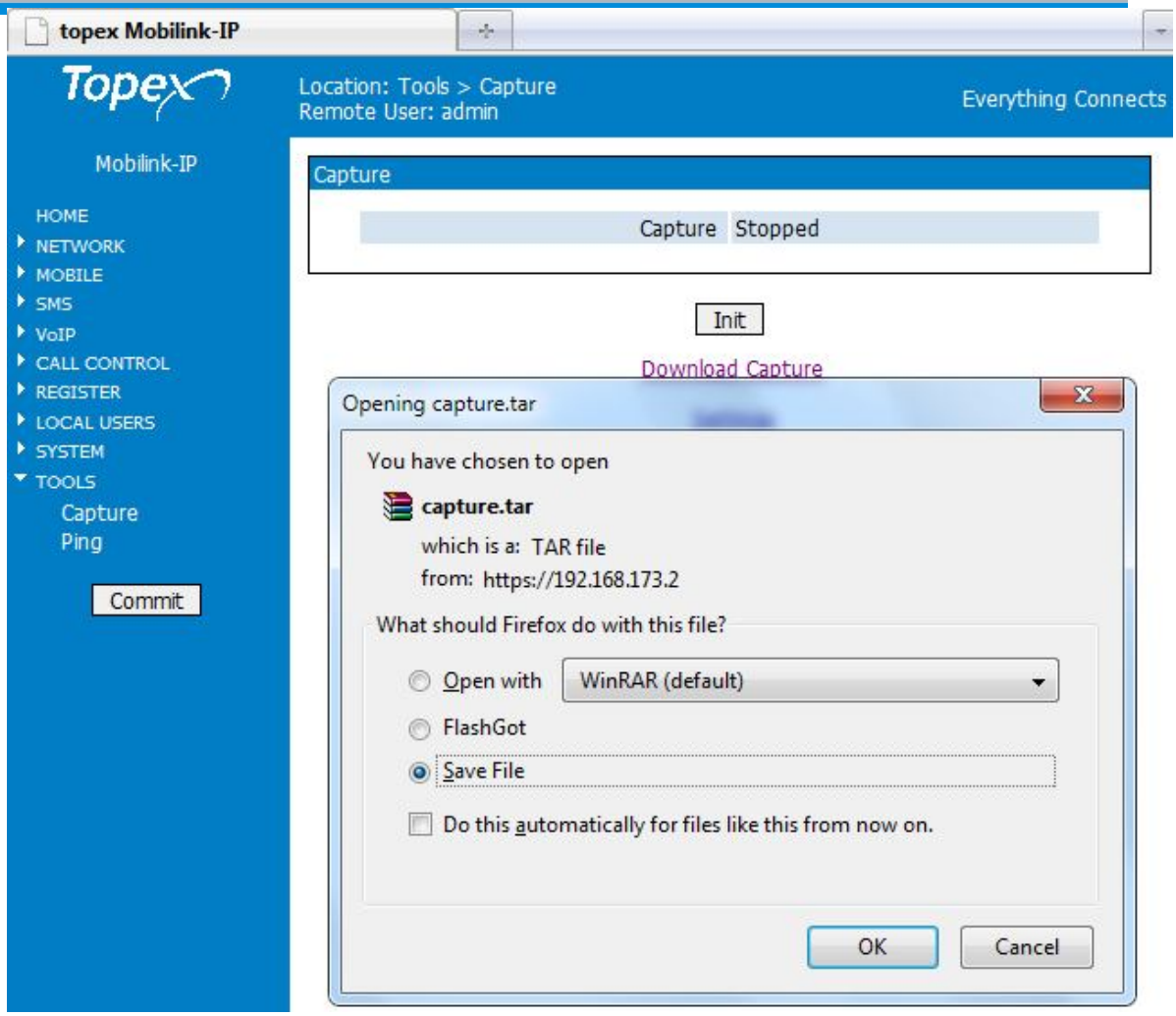
Now the message says “Capture stopped”.

You can:

- pres **Init** to go to the initial state and erase the current capture that is stored in MobiLink IP
- **download** the capture that you performed,
- Go to **settings** page for advanced configuration of the capture functions.



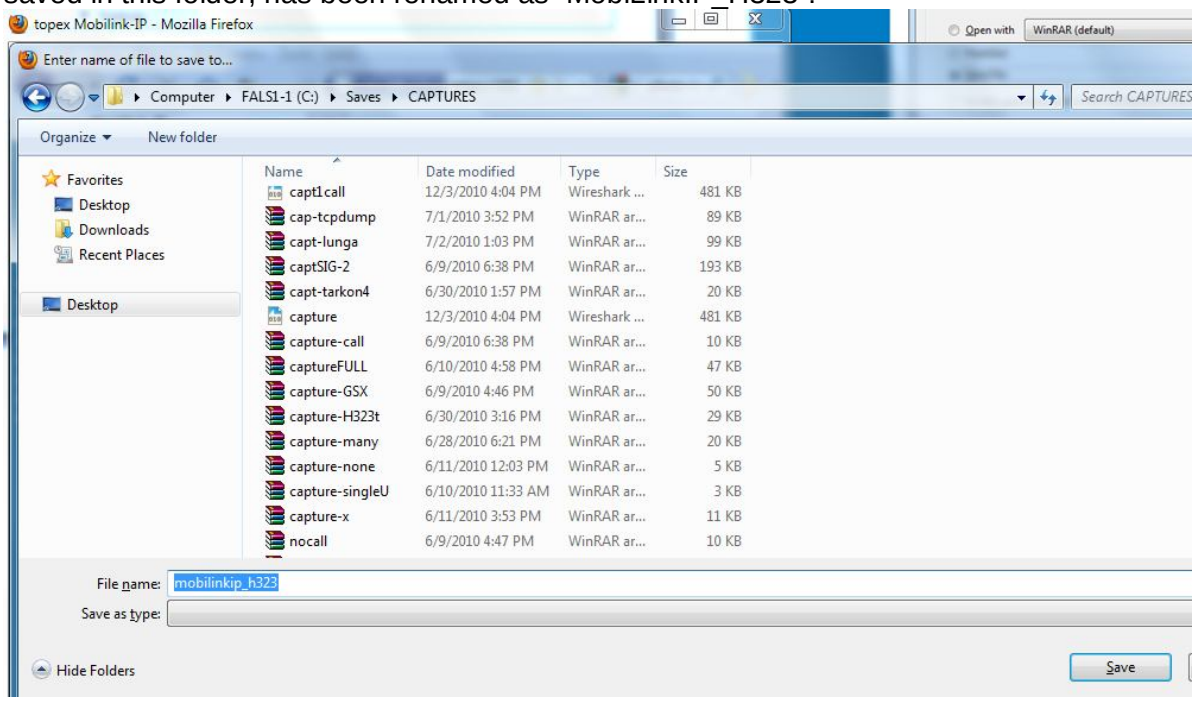
Should you choose Download, the window “Opening capture.tar” shows up, asking you what to do with this file.



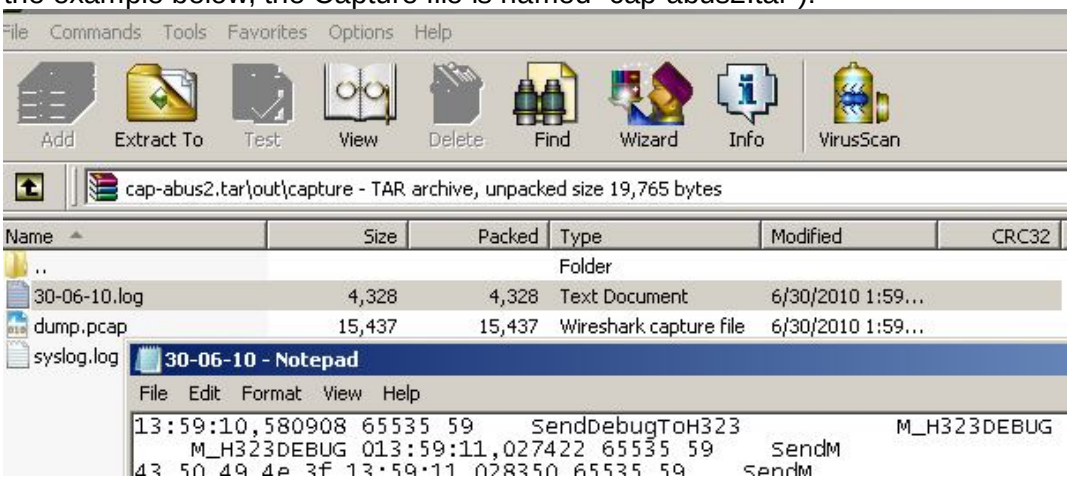
Normally, you should save it into a dedicated folder on your computer, to be able later to send the downloaded capture to the specialists (support team) or to look at it yourself.

You can change the default directory, or make a special folder to store the captures, if you use frequently this feature.

In the example below, this directory is called “CAPTURES”, and the current capture file, which is saved in this folder, has been renamed as “MobiLinkIP_H323”:



The capture files are intended for the specialized support personnel. If you want to view the content of the Capture archive, you should first open it with an utility program which can un-pack tar archives (in the example below, the Capture file is named “cap-abus2.tar”):

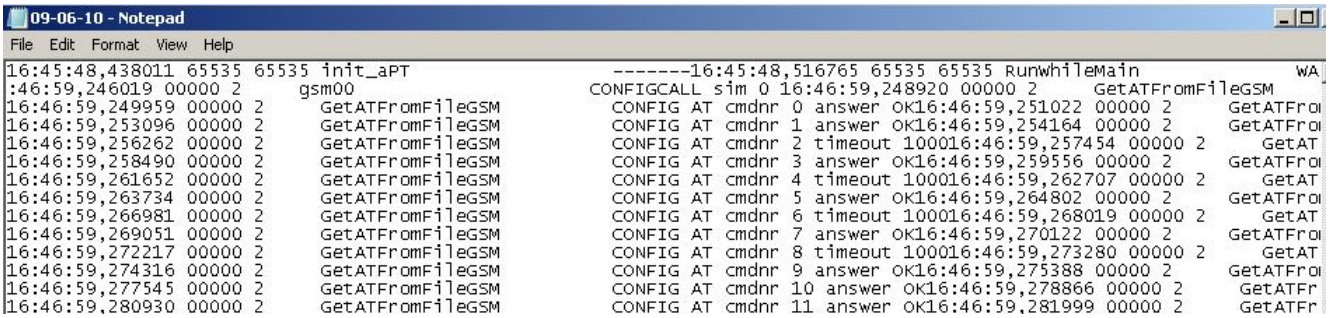


The Capture archive includes several directories holding different files, such as “**dump.tcap**” which is the result of the TCPDUMP operation, and “**DD-MM-YY.log**”, which is the log created by the Capture operation.

It is a text file, whose name indicates the day when it was created, such as “30-06-10” in this example:

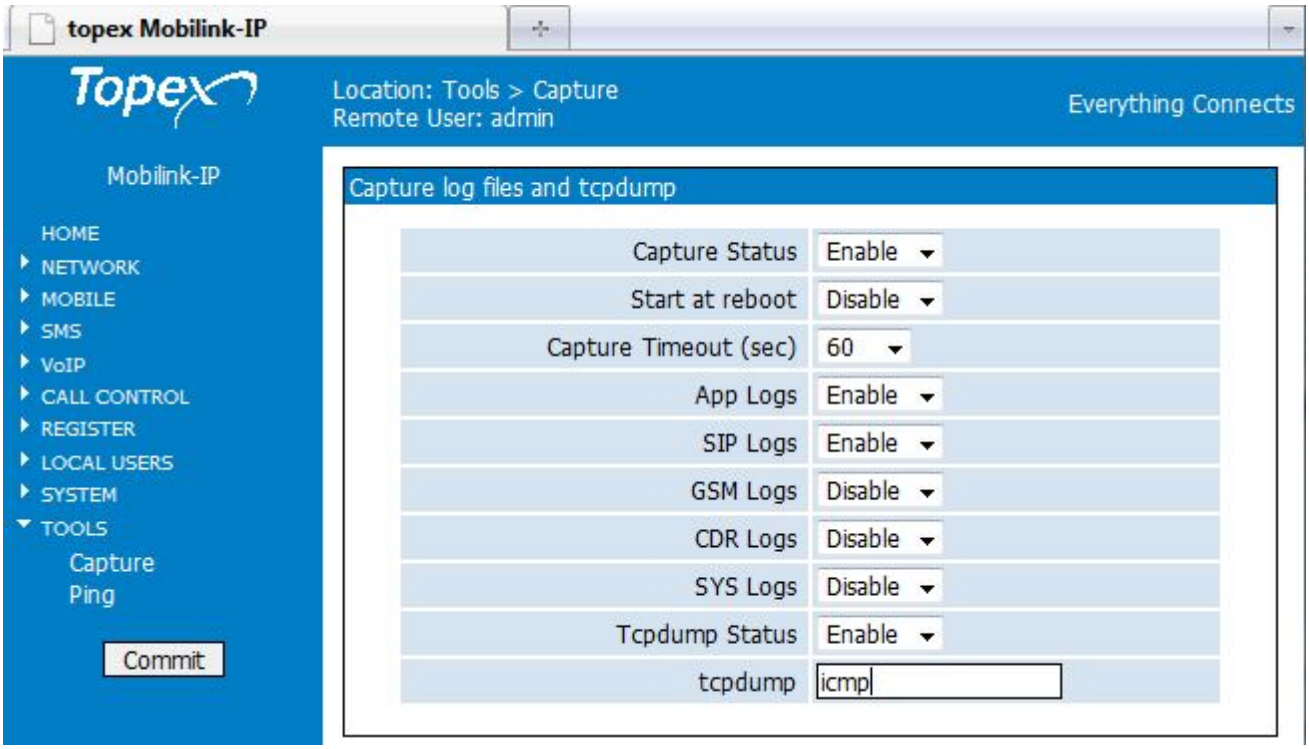
14:40:55,847439 65535 59 SendDebugToH323 M_H323DEBUG
14:40:55,848797 65535 59 SendDebugToH323OUT M_H323DEBUG
14:40:55,923062 65535 144 send_oksim0 OK SIM0
14:40:55,923914 65535 144 analize_mes_mobip buflng 11 007808 4f4b205349
14:40:55,924997 65535 144 DispatchFromPort M_PORTISDN port 0
14:40:55,925868 65535 144 DispatchFromPort MSKJON
14:40:55,926696 65535 144 DispatchFromPort P_KEYPAD dest 0 len 8 debug_run 0 debug_gsm 0 moniport 1
14:40:55,938989 00000 3 Pid_Set_Timer_Persistent tmr 0 val 10000
14:40:56,354170 65535 65535 init_aPT -------
14:40:56,422727 65535 65535 RunWhileMain WARN int in int retval 70022, run_nr

Or like this:



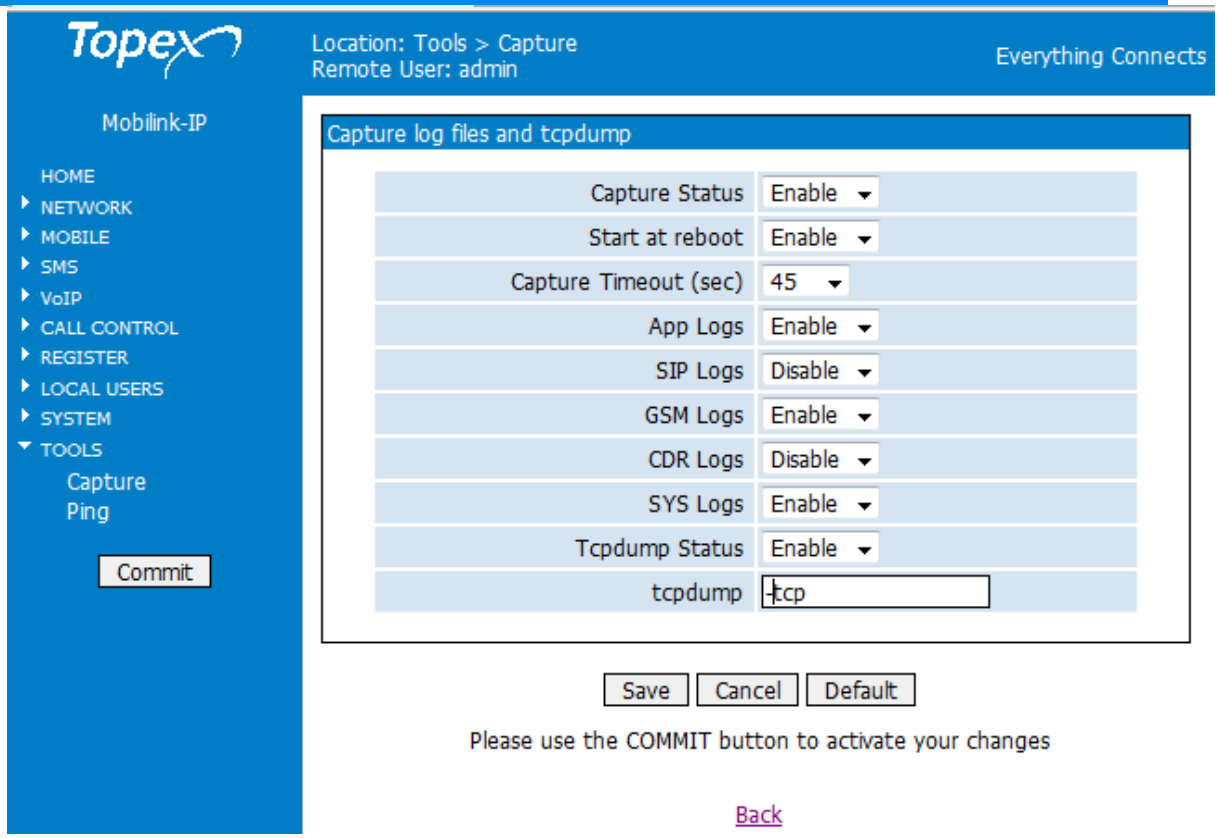
6.11.2 Settings

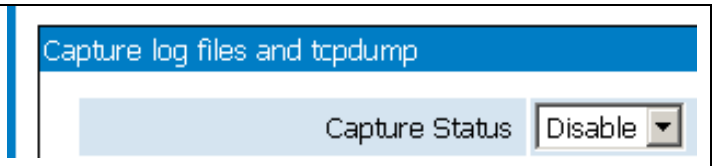
This page allows you to configure advanced settings for the Capture feature of MobiLink IP



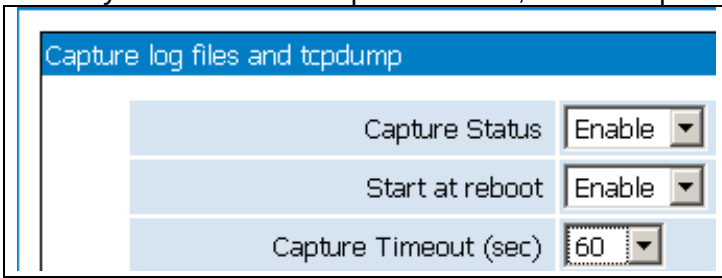
The advanced settings for the Capture tool include:

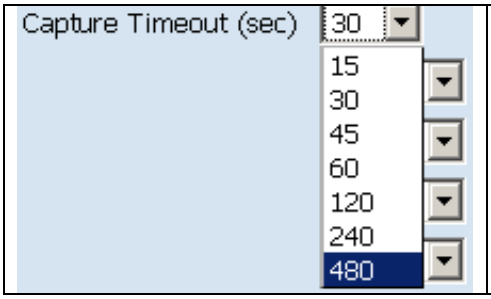
- activation of the Capture feature
- enable capturing upon starting up of MobiLink IP (at boot) and duration of this reboot capture
- establish default checkboxes for the **TOOLS>Capture page**, this way setting up the log files which will be included it the capture archive
- tcpdump status (enabled, disabled) and command-line parameters for it:



First of all, enable or disable the **Capture** feature. By default, it is Disabled. Set it to Enable if you need to perform capture!	

When you Disable the Capture feature, all subsequent fields will be disabled!

	If you enable "**Start at reboot**", the capture will begin immediately as MobiLink IP starts operating, and will continue for the duration established in the field "Capture Timeout". MobiLink IP will run the Capture utility immediately as it starts operation, before other programs, such as the principal application, the call control function.

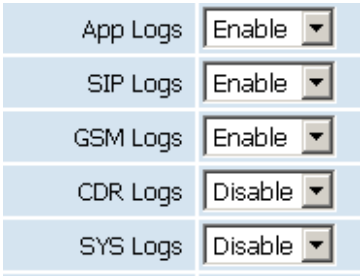
	**Capture Timeout** – here you can select from the drop list the duration of the capture performed upon MobiLink IP start-up. Available time intervals are 15, 30, 45 , 60, 120, 280 and respectively 480 seconds (up to eight minutes).

Activate:

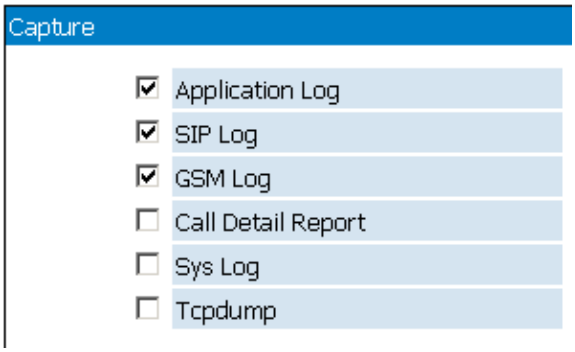


To activate the settings, use the buttons Save and respectively Commit to make active the option of performing capture upon start-up, and Back to go back to the first page of the TOOLS>Capture menu.

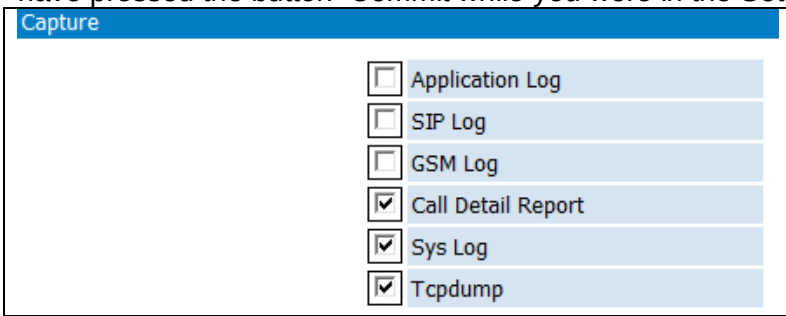
Establishing the defaults for capture:



If in "Settings" you have Enabled, for instance, only the first three items for logs, upon next restart of MobiLink IP, in the page Capture you will see that, correspondingly, the first three checkboxes are marked by default:

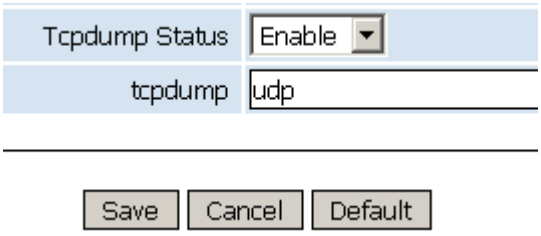


The modifications that you perform in Settings will be found again in capture in Capture only if you have pressed the button Commit while you were in the Settings page.



Another example, where by default the last three boxes show up as checked in the page Capture:

TCPDUMP

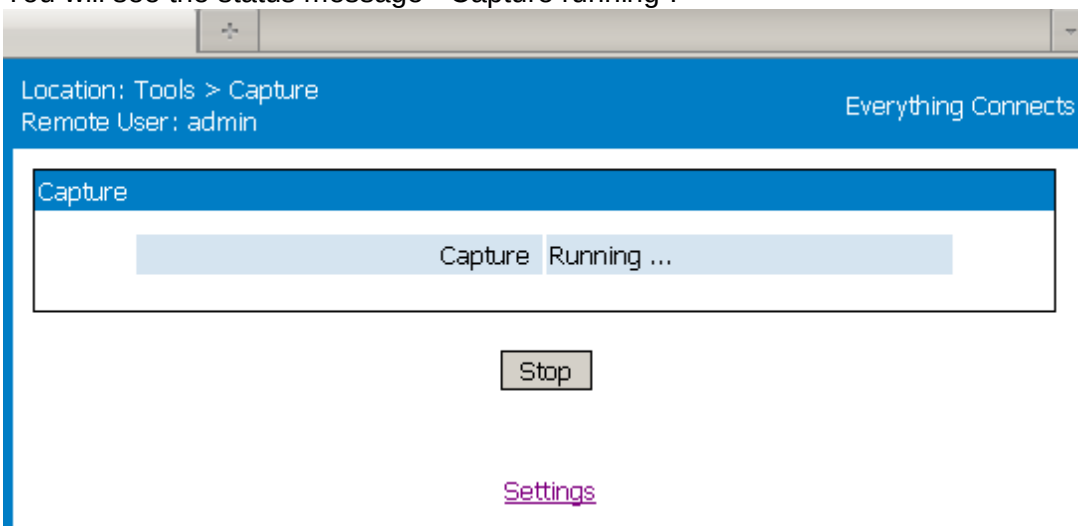


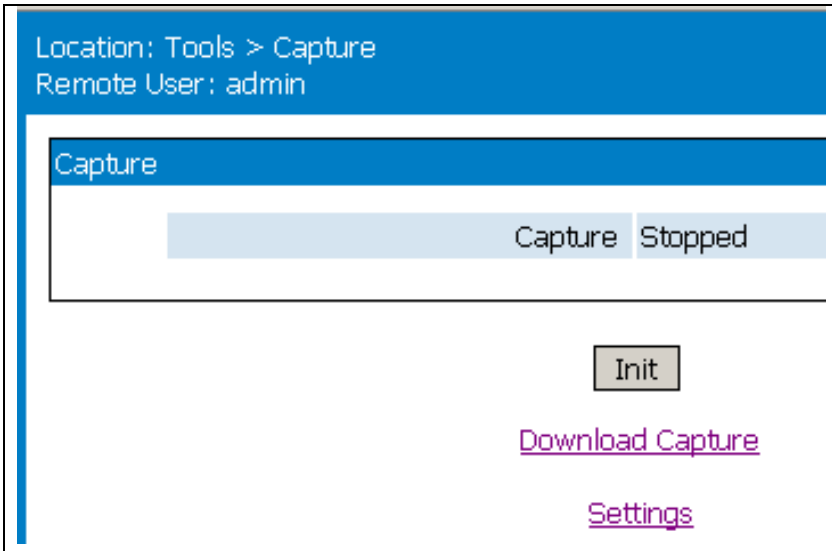
You can Enable the TCPDUMP feature, to dump traffic in the network were MobiLink is connected. Then in the field "tcpdump" you can insert command – line parameters, to filter out the stored dumping information.

For instance, "udp" tells TCPDUMP to store only information about the packets transferred using the UPD protocol.

Save the new settings, then press Start to begin the capture.

You will see the status message “ Capture running”:



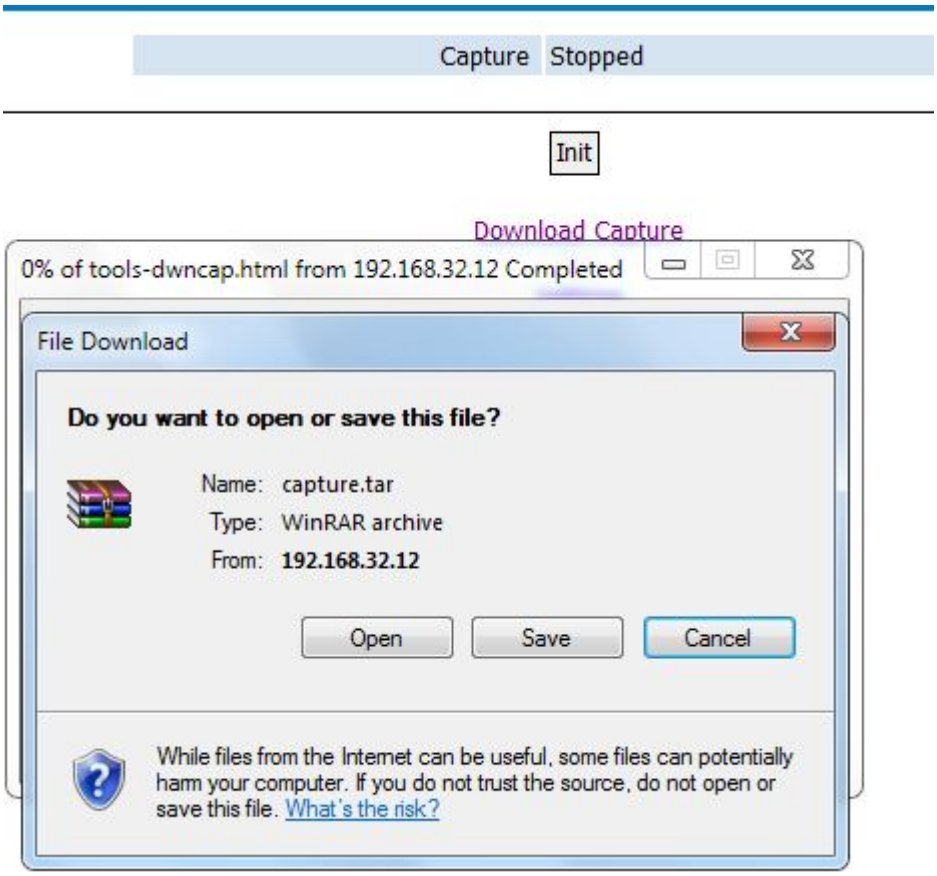


After you have stopped the Capture by clicking the Stop button, you have three options, as shown in the image to the left:

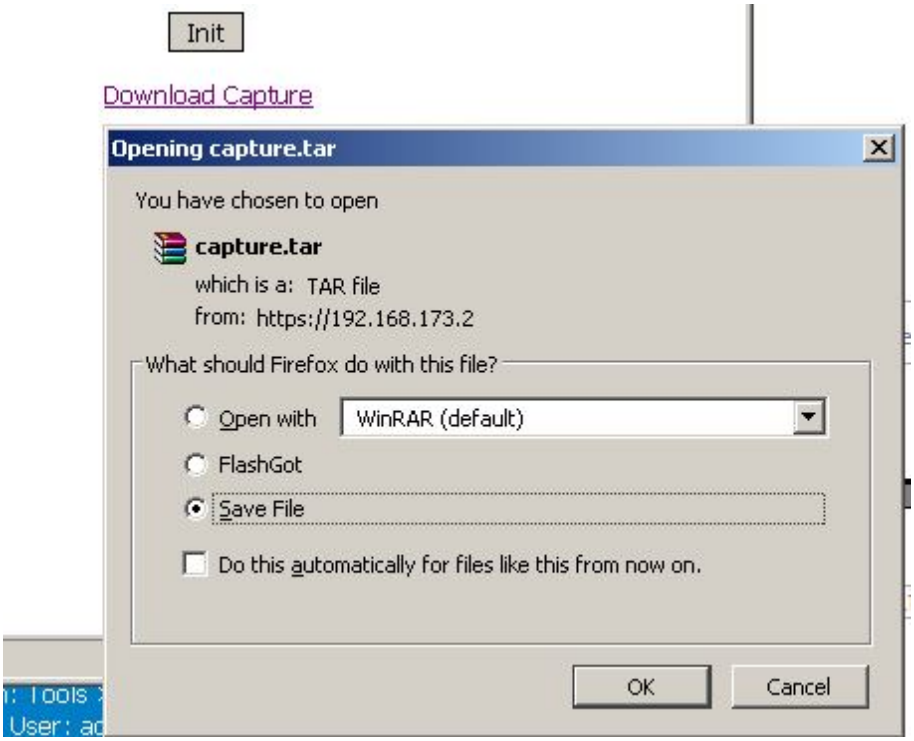
- press **Init** to erase the Capture archive that was created and to go back to the initial configuration page for Capture;
- **Download Capture**, to save the Capture archive on the harddisk;
- **Settings**, to go to the page with advanced settings for capture.

6.11.3 Download Capture

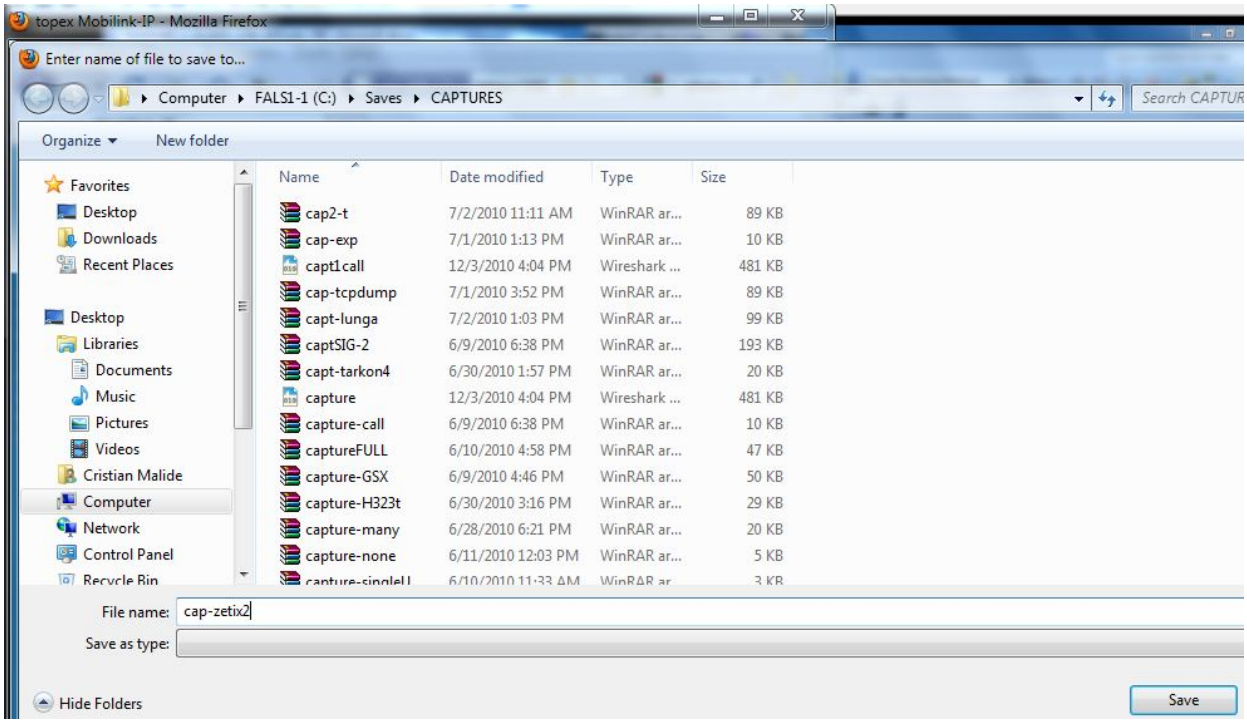
When you press the link “Download Capture”, the window “Opening capture.tar” shows up, indicating that your computer tries to open the capture archive which is located on the MobiLinkIP equipment.



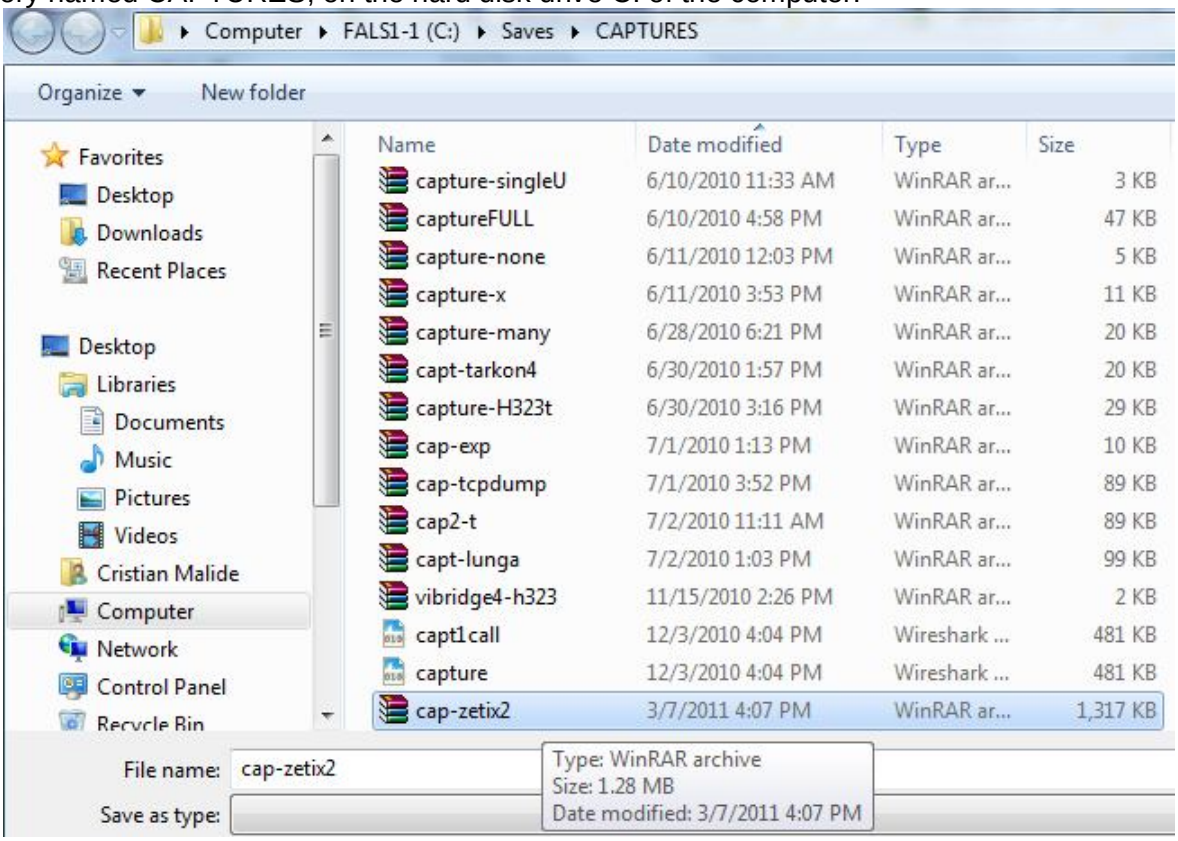
Select “save file” to save it in a directory of your choice on your computer.



You may change the default name of the capture file into one that is more meaningful to you:



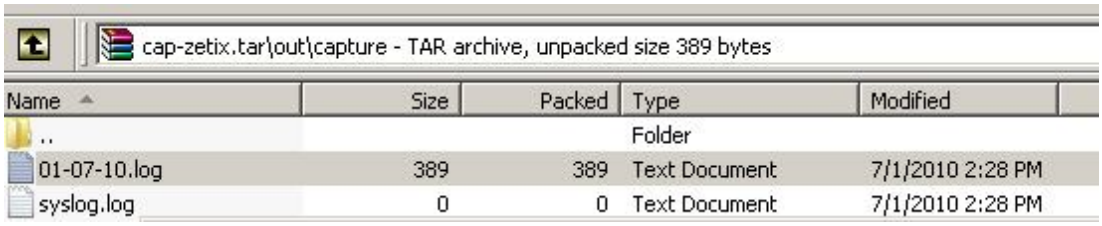
In the example below, the capture files (the latest one being renamed as “cap-zetix2” are stored in the directory named CAPTURES, on the hard disk drive C: of the computer:

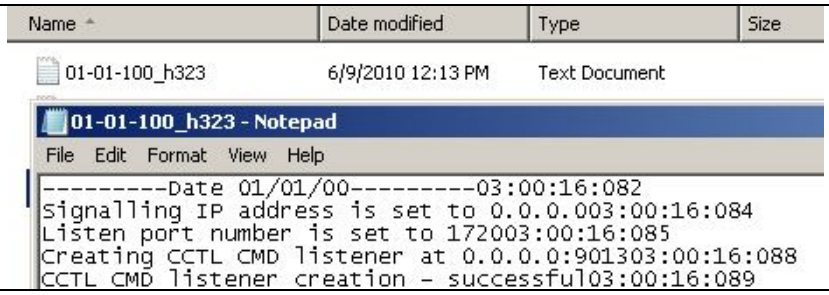


The Capture must be sent to the support personnel.

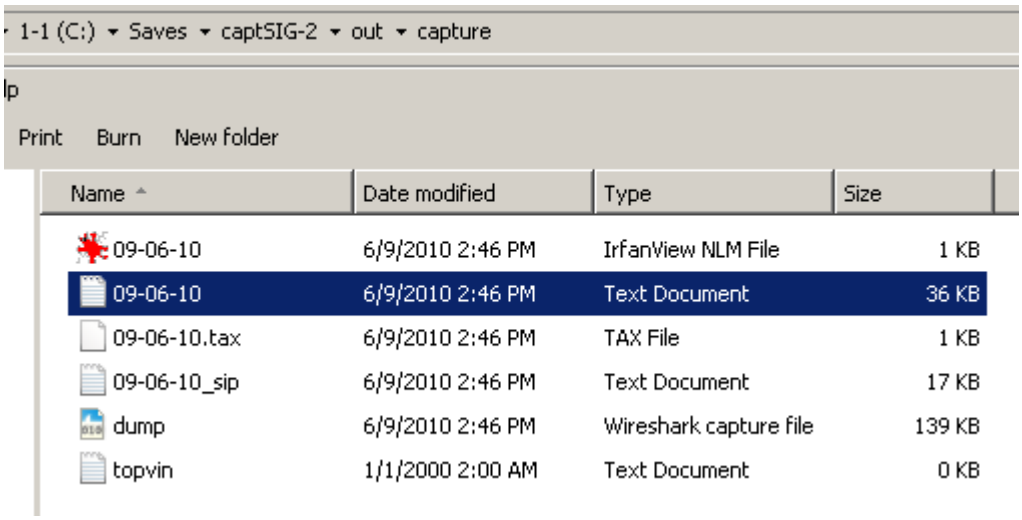
6.11.4 View Capture

The Capture files can be opened with an utility which knows to unpack .tar archives. Depending upon the configuration you have selected, the Capture archive may contain a single text log, or several files:

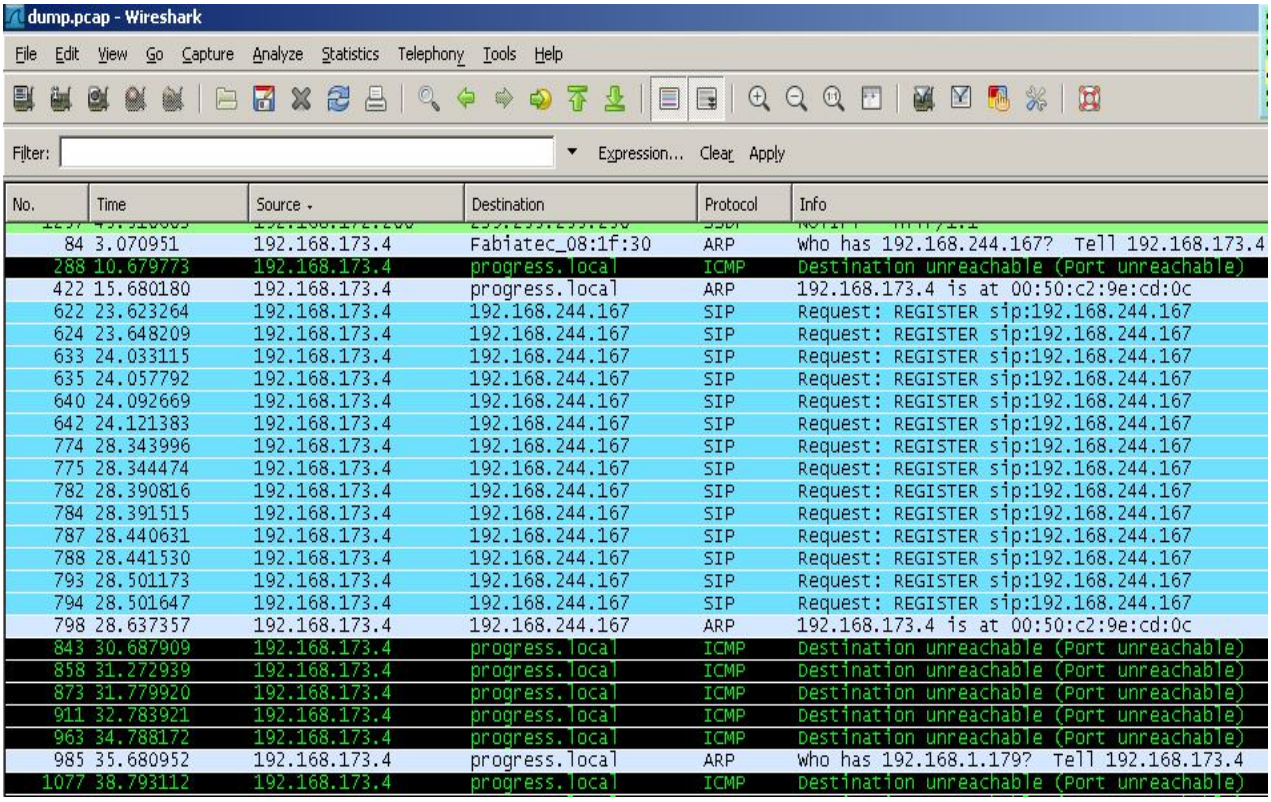


The text file is the Capture log itself:	

Other files in the Capture archive may contain information about billing (CDR), about the SIP users (SIP) and respectively the tcpdump “dump” file:

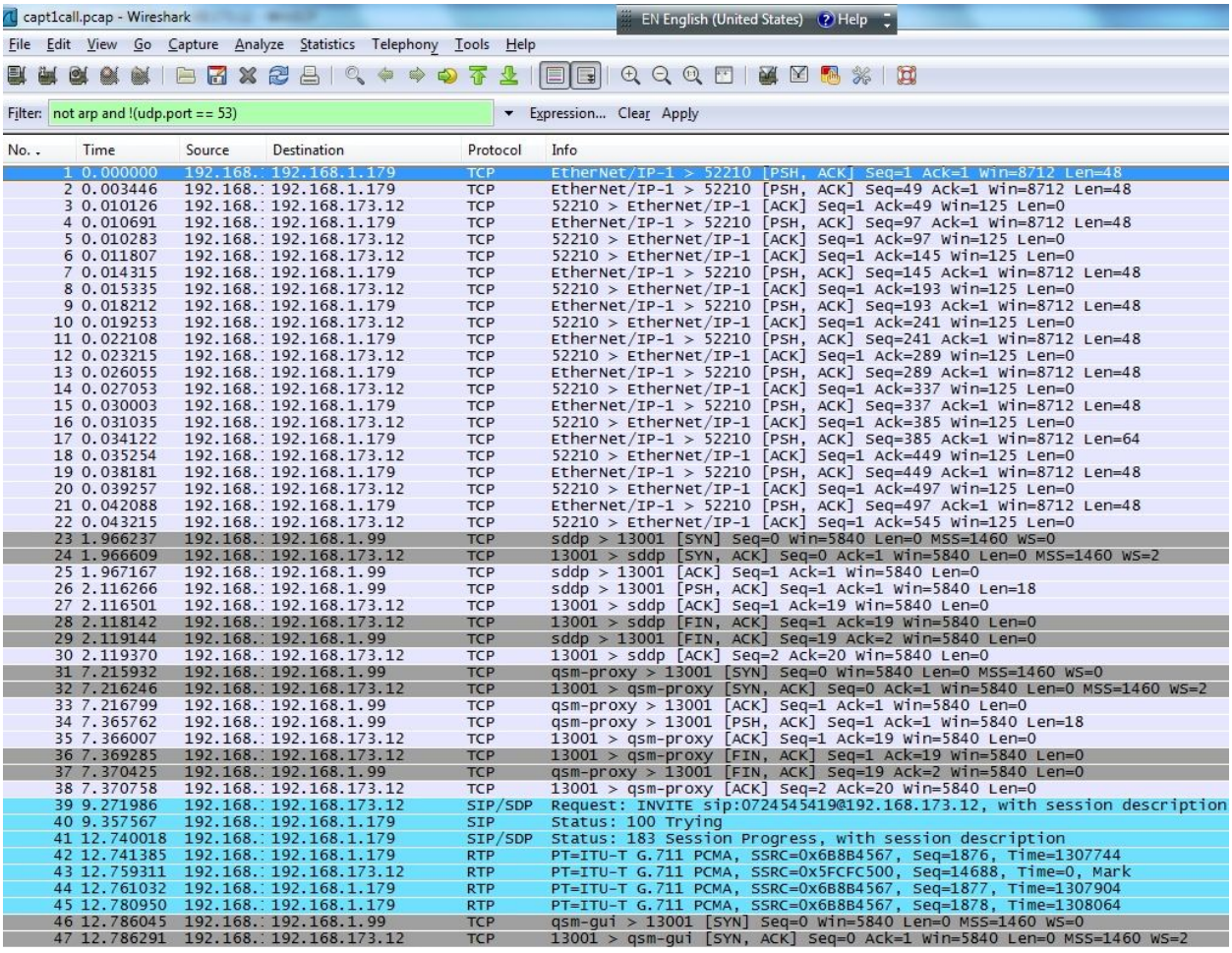


You can open it with dump.pcap (Ethereal or WireShark program) , as shown in the following examples:



No.	Time	Source	Destination	Protocol	Info
84	3.070951	192.168.173.4	Fabiatec_08:1f:30	ARP	who has 192.168.244.167? Tell 192.168.173.4
288	10.679773	192.168.173.4	progress.local	ICMP	Destination unreachable (Port unreachable)
422	15.680180	192.168.173.4	progress.local	ARP	192.168.173.4 is at 00:50:c2:9e:cd:0c
622	23.623264	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
624	23.648209	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
633	24.033115	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
635	24.057792	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
640	24.092669	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
642	24.121383	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
774	28.343996	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
775	28.344474	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
782	28.390816	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
784	28.391515	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
787	28.440631	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
788	28.441530	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
793	28.501173	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
794	28.501647	192.168.173.4	192.168.244.167	SIP	Request: REGISTER sip:192.168.244.167
798	28.637357	192.168.173.4	192.168.244.167	ARP	192.168.173.4 is at 00:50:c2:9e:cd:0c
843	30.687909	192.168.173.4	progress.local	ICMP	Destination unreachable (Port unreachable)
858	31.272939	192.168.173.4	progress.local	ICMP	Destination unreachable (Port unreachable)
873	31.779920	192.168.173.4	progress.local	ICMP	Destination unreachable (Port unreachable)
911	32.783921	192.168.173.4	progress.local	ICMP	Destination unreachable (Port unreachable)
963	34.788172	192.168.173.4	progress.local	ICMP	Destination unreachable (Port unreachable)
985	35.680952	192.168.173.4	progress.local	ARP	who has 192.168.1.179? Tell 192.168.173.4
1077	38.793112	192.168.173.4	progress.local	ICMP	Destination unreachable (Port unreachable)

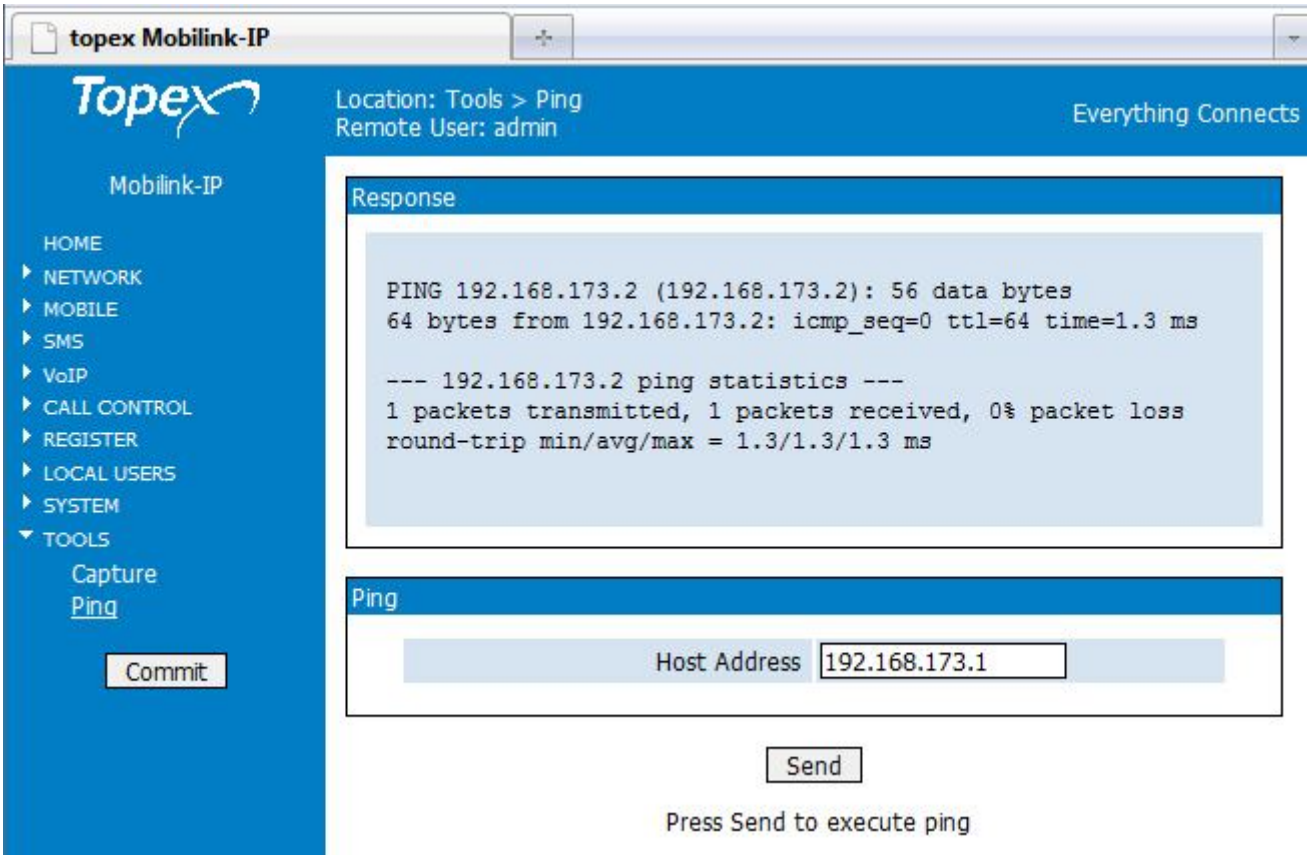
Or like this:



No.	Time	Source	Destination	Protocol	Info
1	0.000000	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=1 Ack=1 Win=8712 Len=48
2	0.003446	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=49 Ack=1 Win=8712 Len=48
3	0.010126	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=49 Win=125 Len=0
4	0.010691	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=97 Ack=1 Win=8712 Len=48
5	0.010283	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=97 Win=125 Len=0
6	0.011807	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=145 Win=125 Len=0
7	0.014315	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=145 Ack=1 Win=8712 Len=48
8	0.015335	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=193 Win=125 Len=0
9	0.018212	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=193 Ack=1 Win=8712 Len=48
10	0.019253	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=241 Win=125 Len=0
11	0.022108	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=241 Ack=1 Win=8712 Len=48
12	0.023215	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=289 Win=125 Len=0
13	0.026055	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=289 Ack=1 Win=8712 Len=48
14	0.027053	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=337 Win=125 Len=0
15	0.030003	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=337 Ack=1 Win=8712 Len=48
16	0.031035	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=385 Win=125 Len=0
17	0.034122	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=385 Ack=1 Win=8712 Len=64
18	0.035254	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=449 Win=125 Len=0
19	0.038181	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=449 Ack=1 Win=8712 Len=48
20	0.039257	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=497 Win=125 Len=0
21	0.042088	192.168.	192.168.1.179	TCP	EtherNet/IP-1 > 52210 [PSH, ACK] Seq=497 Ack=1 Win=8712 Len=48
22	0.043215	192.168.	192.168.173.12	TCP	52210 > EtherNet/IP-1 [ACK] Seq=1 Ack=545 Win=125 Len=0
23	1.966237	192.168.	192.168.1.99	TCP	sddp > 13001 [SYN] Seq=0 Win=5840 Len=0 MSS=1460 WS=0
24	1.966609	192.168.	192.168.173.12	TCP	13001 > sddp [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 WS=2
25	1.967167	192.168.	192.168.1.99	TCP	sddp > 13001 [ACK] Seq=1 Ack=1 Win=5840 Len=0
26	2.116266	192.168.	192.168.1.99	TCP	sddp > 13001 [PSH, ACK] Seq=1 Ack=1 Win=5840 Len=18
27	2.116501	192.168.	192.168.173.12	TCP	13001 > sddp [ACK] Seq=1 Ack=19 Win=5840 Len=0
28	2.118142	192.168.	192.168.173.12	TCP	13001 > sddp [FIN, ACK] Seq=1 Ack=19 Win=5840 Len=0
29	2.119144	192.168.	192.168.1.99	TCP	sddp > 13001 [FIN, ACK] Seq=19 Ack=2 Win=5840 Len=0
30	2.119370	192.168.	192.168.173.12	TCP	13001 > sddp [ACK] Seq=2 Ack=20 Win=5840 Len=0
31	7.215932	192.168.	192.168.1.99	TCP	qsm-proxy > 13001 [SYN] Seq=0 Win=5840 Len=0 MSS=1460 WS=0
32	7.216246	192.168.	192.168.173.12	TCP	13001 > qsm-proxy [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 WS=2
33	7.216799	192.168.	192.168.1.99	TCP	qsm-proxy > 13001 [ACK] Seq=1 Ack=1 Win=5840 Len=0
34	7.365762	192.168.	192.168.1.99	TCP	qsm-proxy > 13001 [PSH, ACK] Seq=1 Ack=1 Win=5840 Len=18
35	7.366007	192.168.	192.168.173.12	TCP	13001 > qsm-proxy [ACK] Seq=1 Ack=19 Win=5840 Len=0
36	7.369285	192.168.	192.168.173.12	TCP	13001 > qsm-proxy [FIN, ACK] Seq=1 Ack=19 Win=5840 Len=0
37	7.370425	192.168.	192.168.1.99	TCP	qsm-proxy > 13001 [FIN, ACK] Seq=19 Ack=2 Win=5840 Len=0
38	7.370758	192.168.	192.168.173.12	TCP	13001 > qsm-proxy [ACK] Seq=2 Ack=20 Win=5840 Len=0
39	9.271986	192.168.	192.168.173.12	SIP/SDP	Request: INVITE sip:0724545419@192.168.173.12, with session description
40	9.357567	192.168.	192.168.1.179	SIP	Status: 100 Trying
41	12.740018	192.168.	192.168.1.179	SIP/SDP	Status: 183 Session Progress, with session description
42	12.741385	192.168.	192.168.1.179	RTP	PT=ITU-T G.711 PCMA, SSRC=0x6B8B4567, Seq=1876, Time=1307744
43	12.759311	192.168.	192.168.173.12	RTP	PT=ITU-T G.711 PCMA, SSRC=0x5FCFC500, Seq=14688, Time=0, Mark
44	12.761032	192.168.	192.168.1.179	RTP	PT=ITU-T G.711 PCMA, SSRC=0x6B8B4567, Seq=1877, Time=1307904
45	12.780950	192.168.	192.168.1.179	RTP	PT=ITU-T G.711 PCMA, SSRC=0x6B8B4567, Seq=1878, Time=1308064
46	12.786045	192.168.	192.168.1.99	TCP	qsm-gui > 13001 [SYN] Seq=0 Win=5840 Len=0 MSS=1460 WS=0
47	12.786291	192.168.	192.168.173.12	TCP	13001 > qsm-gui [SYN, ACK] Seq=0 Ack=1 Win=5840 Len=0 MSS=1460 WS=2

6.11.5 Ping

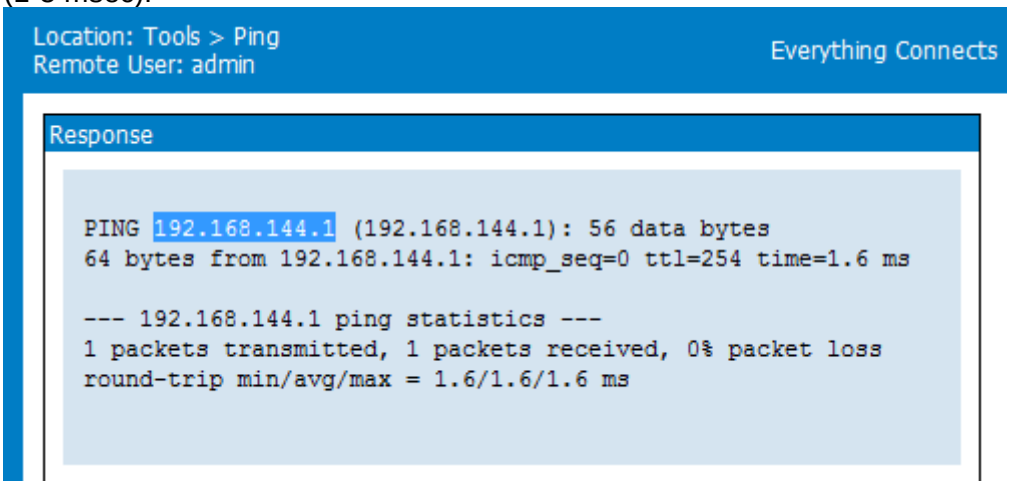
Allows you to send an Internet Control Message Protocol (ICMP) Echo Request to the address you enter in the field “Host Address”:



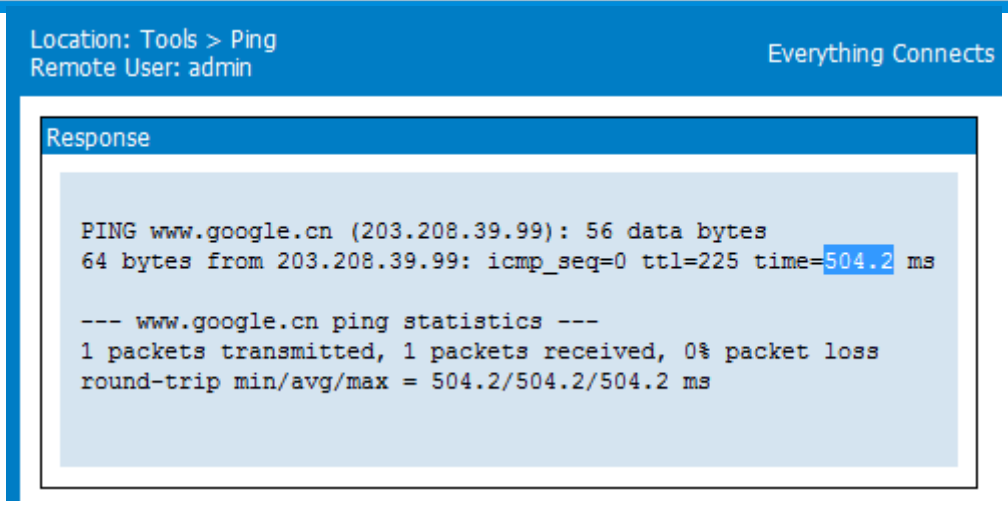
Ping is a basic Internet program that allows a user to verify that a particular IP address exists and can accept requests. It used diagnostically to ensure that a host computer the user is trying to reach is actually operating, to test connectivity and determine response time.

Enter the address and click the Send button.
The field “Response” will show the result (received or not) and statistics about the time or propagation.

You can PING a host in the local network were MobiLink IP is connected, with very low response time (1-5 msec):

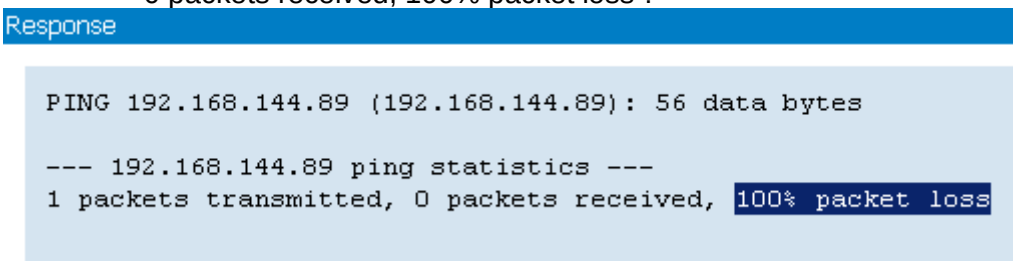


Or you can use TOOLS>Ping to check a public (external address), when the round trip delay will be of course larger:

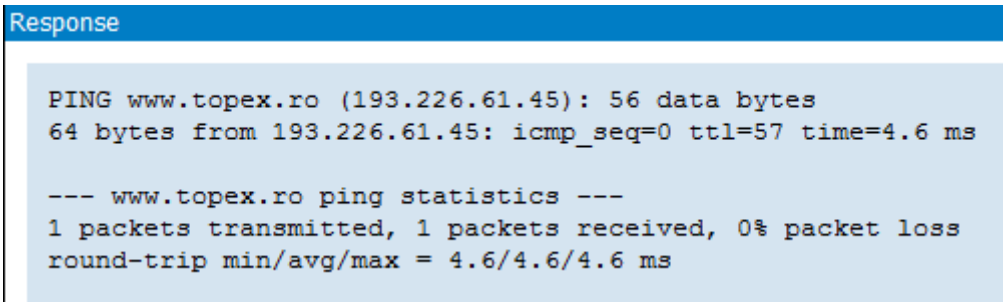


When the host is unavailable, you will receive no specific error message, but you will see that no packets get through, the answer is something like this:

"0 packets received, 100% packet loss":



Or:



7. TECHNICAL SPECIFICATIONS

TITLE	DESCRIPTION
Mobile networks supported	GSM /GPRS and respectively UMTS/HSPA for the 3G modules
Frequency bands	Depending upon actual type of modules fitted GSM/GPRS/EDGE: Tri-band, 800/900/1800 MHz UMTS 2100MHz: 2100 MHz (Band Class 1)
Supported protocols	TCP/IP, PPP, CHAP, PAP, ARP, UDP, NTP and others
VoIP	Two channels, H323 and SIP protocols supported
Features	Secure Web page configuration, by means of a browser, no additional software is required for administration and management
Wired Network interface	One LAN port, Ethernet 10/100 base-T Connector type: female RJ45 Transfer speed: 10/100 Mbps
RTC	Optional Real Time Clock with holding Li-ion battery, keeps accurate time even when the equipment is powered off.
Max. transmitter power	Depending upon actual type of modules fitted GSM/GPRS/EDGE 800/900MHz: +32dBm (Power Class 4) GSM/GPRS/EDGE 1800MHz: +29 dBm (Power Class 1) UMTS/HSDPA 2100MHz: +23dBm (Power Class 3. 8PSK mode Class E2) , only for devices fitted with 3G modules
Receiver static sensitivity	Depending upon actual type of modules fitted GSM/GPRS/EDGE 800/900: - 107 dBm 1800 MHz: -105 dBm Compliant with TS 05.05 (R99) UMTS/HSDPA 2100MHz: Compliant with 3GPP TS 25.101(R5) only for devices fitted with 3G modules
Voice service	GSM: FR, EFR, HR, AMR UMTS: AMR(12.2kbps/10.2kbps/7.95kbps/7.4kbps/6.7kbps/5.9kbps /5.15kbps/4.75kbps)
Concurrent service (Based on UMTS)	1 UMTS CS voice + 1 UMTS PS data, only for devices fitted with 3G modules
SMS	Supporting SMS based on CS domain of GSM or UMTS Supporting SMS based on PS domain of UMTS
Supply voltage	12 $V_{D.C.}$ (+ centre wire, - external conductor)
Mobile antennas	External quad-band antennas with magnetic base and cable
Supply adapter	Special adapter, Sunny Enterprises SYS135x output : 12 $V_{D.C.}$ / 2 A Input: from 100 to 240 $V_{A.C.}$ / 0,3 A / 50 Hz
Power consumption	Less than 20 W
Status indicators	Three bicolor LEDs, for Status, Mobile 1, Mobile 2
Temp. range	Operating: 5^0 .... 50^0 C Storage: 0^0.... 60^0 C

TITLE	DESCRIPTION
Dimensions (LxWxH)	222x115x32 (mm) except protrusions
Weight	500 g – MobiLink IP unit 1 kg – the whole package

8. OPERATING ENVIRONMENT

MobiLinkIP was designed for indoor use only, so you should NOT operate it outdoors.

Install the MobiLinkIP in closed rooms or enclosures, where the environmental conditions should be:

- operating temperature range: from 5 to 50 degrees C
- relative humidity: from 10 to 85 %, non-condensing

Avoid dust and prolonged exposure to sun. In addition, The MobiLinkIP must NOT be used in a flammable or explosive environment, or in locations where toxic or flammable gases may accumulate.

The equipment must be handled with care, to avoid mechanical shocks and blows.

The MobiLinkIP should not be used in an environment with high level of EMI (electromagnetic interferences) that is in close proximity to high power equipment such as electric motors or heaters. In addition, it should not be placed near copiers, PC monitors, TV sets or other audio-video appliances.

In order to ensure adequate working temperature, the MobiLinkIP interface must not be used too close to heat sources or in direct sunlight.
Also, it must not be overcrowded: leave free space around, below and above the MobiLinkIP router. This is needed both for connecting Ethernet and antennas cables, and also for ventilation (natural air cooling to dissipate the heat generated during operation).

When allowed operating temperature is exceeded this may not have an immediate, visible effect on the MobiLinkIP unit, but it can result in unreliable operation, accelerated ageing and hence diminishing of lifetime.

When selecting the location for installing the external antennas of the MobiLinkIP, refer to the recommendations described in the chapter about mounting the equipment.

The MobiLinkIP device does not include materials or components that are harmful to the environment.

When the life cycle of this device has expired and it cannot be repaired or re-used, dispose of it in accordance with applicable laws and legal regulations.

9. REGULATORY INFORMATION

I. Electrical Safety Information:

A) Compliance is required with respect to the voltage, frequency, and current requirements indicated on the manufacturer's label. Connection to a different power source than those specified herein will likely result in improper operation, damage to the equipment or pose a fire hazard if the limitations are not followed.

B) There are no operator serviceable parts inside this equipment. Service should be provided only by a qualified service technician.

C) This equipment is provided with a detachable power supply adapter, use only this adapter in order to power the equipment.

II. Emissions and Immunity Information

A) Notice to Users in the European Union:

Use only the provided power supply adapter and interconnecting cabling provided with the equipment. Substitution of provided power supply and cabling may compromise electrical safety or CE Mark Certification for emissions or immunity as required by the following standards:
This equipment has been tested to the requirements for the CE Mark as required by EMC Directive 89/336/EEC indicated in European Standard EN 55022 Class B and the Low Voltage Directive 73/23/EEC as indicated in European Standard EN 60950.

B) General Information to all Users:

This equipment generates, uses and can radiate radio frequency energy. If not installed and used according to this manual the equipment may cause interference with radio and television communications.

In order to meet emission and immunity requirements, the user must observe the following:
a) Use only the provided I/O cables to connect this device with any computer.
b) To ensure compliance, use only the provided manufacturer's approved accessories.

10. GLOSSARY – Acronyms and explanations

3G – "Third generation" mobile networks, specially designed for high speed data services. The classic definition of wireless networks that following the 2G systems (GSM) and they offer high speed data services in addition to the basic voice capability. These 3G mobile communications systems provide an enhanced range of multimedia services (high speed Internet access, video streaming, etc.). The high data transfer speed specific to the third generation communications network leads to an increased efficiency of information transmission, while the real time access to data and information means important savings of time and money. UMTS is the best known of the 3G networks, while HSPA is a 3,5 or 3G+ development.

ANI – Acronym for **Automatic Number Identification** - a feature of telephony intelligent network services which allows subscribers to display or capture the telephone numbers of calling parties. The service is often provided by sending the digital tone multi frequency (DTMF) tones along with the call. Home users of ANI can screen callers. ANI is commonly used by emergency centre dispatchers to save the caller having to report the information and, when necessary, to help locate callers. A telephone company's 9-1-1 service to a public safety point usually includes the ANI feature. For instance, in a call centre, ANI displays the number of the calling party to the call centre agent in real time. Among other things, the call center can use the information to forward calls to different people for different geographic areas.

DHCP (Dynamic Host Configuration Protocol) - This protocol allows a computer (or many computers on your network) to be automatically assigned a single IP address from a DHCP server. DHCP is available on MobiLinkIP number that the caller dialed. DNIS works by passing the touch tone digits (dual tone multi frequency or MF digits) to the destination where a special facility can read and display them or make them available for call center programming. For example, a company may have a different toll free number for each product line it sells. If a call center is handling calls for multiple product lines, the switch that receives the call can examine the DNIS, and then play the appropriate recorded greeting. Another example of multiple toll free numbers might be used for multi-lingual identification. A dedicated toll free number might be set up for Spanish or Chinese speaking customers.

DNS – Acronym for Domain Name System (or Service), an Internet service that translates domain names into IP addresses. This allows the Internet hosts to use both addresses type domain name (such as topex.ro or linux.org), and addresses type IP numbers (for instance 192.17.3.4). The domain name addresses are intended for human users and are automatically converted into IP (numeric) addresses. Because domain names are alphabetic, they are much easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, therefore, a DNS service must translate the name into the corresponding IP address.

DNS Server – computer able to answer to the interrogations in a DNS system. The DNS server maintains a database that includes the host computers with their domain names and the corresponding IP addresses. For instance, if you ask the DNS server for the domain name apex.com, it will return the IP address of the hypothetical company called Apex. DNS servers are linked in their network, so if one DNS server doesn't know how to translate a particular domain name, it asks another one, and so on, until the correct IP address is found. When a user enters a domain name into the Internet browser, the user is sent by the DNS Server to the proper IP address. The DNS server address used by the computers on your home network is the location of the DNS.

DNS Server Address (Domain Name System) - DNS allows Internet host computers to have a domain name and one or more IP addresses. A DNS server keeps a database of host computers and their respective domain names and IP addresses, so that server your ISP has assigned.

Dynamic DNS - service that allows clients connecting to the Internet with a dynamic IP address to be able to use applications that require a static IP address. The Internet Service Provider changes the IP address of the users, but there are applications that work only with static (fixed) IP addresses. Dynamic DNS makes it possible for sites on the Internet to establish connections to you computer without need for tracking the IP address themselves. DDNS is useful both for wired or wireless (such as 3G) dialup connection where at each connection a new address is assigned, and for DSL services where the address is changed occasionally by the ISP.

Domain Name Resolution - The resolving of a domain name. Internet applications don't communicate with domain names such as google.com or topex.ro, instead they use IP addresses (for example 193.226.61.95 or 216.239.39.99). Domain Name Resolution is the process (transparent for the user) of converting domain names into corresponding IP addresses. Every operating system has routines that deal with resolution of domain names.

Encryption - This provides wired or wireless less data transmissions with a level of security.

Ethernet - Standard for wired computer networks. Ethernet networks are connected by cables and hubs, and move data around. For wired connections, MobiLinkIP provides one Ethernet 10/100 ports, to be used for linking into the local LAN.

Firewall - System designed to prevent unauthorized access to or from a private network. The firewall determines which information passes in and out of and prevents anyone outside of your network from accessing your computer without authorization and possibly damaging or viewing your files. Any company with an intranet that allows its workers access to the wider Internet must use a software or hardware firewall to prevent outsiders from accessing its own private data resources and for controlling what outside resources its own users have access to. Here the firewall is software, a set of configurable, related programs (residing on the MobiLink IP gateway) that protect the resources of the local (internal) network.

Gateway - A network point that manages all the data traffic of your network, as well as to the Internet and connects one network to another. MobiLinkIP is also gateway, since it interfaces between VoIP calls form the local network and the voice mobile networks.

IP Address – Short from Internet Protocol address. The numerical address of a network device or resource as expressed in the format specified in the Internet Protocol (IP). In the current addressing format, IP version 4, the IP address is a 32-bit (4 bytes) sequence divided into four groups of decimal numbers separated by periods ("dots"). Each number can be zero to 255. These four groups of numbers look like "127.0.0.1" or „213.154.120.170". The four numbers in an IP address are used in different ways to identify a particular network and a host on that network.

IP – Acronym for Internet Protocol. It is the protocol from TCP/IP that directs the way data is sent from one computer to another on the Internet. The messages are divided into data packets, routed from the sender network to the receiver network and there re-assembled in the right order to re-create the original message. Because a message is divided into a number of packets, each packet can, if necessary, be sent by a different route across the Internet. These data packets can arrive in a different order than the order they were sent in. The Internet Protocol just delivers them. It's up to TCP protocol (Transmission Control Protocol) to put the packets back in the right order.

Note that IP is a connectionless protocol, which means that there is no continuing connection between the end points that are communicating. IP corresponds to the layer 3, the Networking Layer from the Open Systems Interconnection (OSI) communication model.

ISP (Internet Service Provider) - An ISP is a business that allows individuals or businesses to connect to the Internet. Users log on to the Internet using an account with an ISP or Internet Service Provider. ISPs can serve IP addresses dynamically, or assign static (fixed) IP addresses to individual computers.

LAN - Acronym for local area network (computer network that spans a relatively small area). A group of computers, workstations and associated devices that share a common communications line or wireless link and are located in a relatively limited area, typically inside the same office building. The communications link that interconnects these computers allows any device of the network to interact with any other from the same network. The devices that compose a local network (workstations, personal computers and peripherals) are called nodes and typically share the resources of a single processor or server. This server has resources (applications, processing and data storage capabilities) that are shared in common by multiple computer users. The LAN can be connected to other local networks over any distance via phone lines, wireless links or other connections, and the system of LANs connected in this way is called a wide-area network (WAN).
The LAN may also be connected to the Internet through a gateway. MobiLinkIP equipment is connected in a local network through its Ethernet port.

LCR – Acronym for **Least Cost Routing** - Refers to the method for delivering calls according to the lowest cost carrier. Often more than one carrier can compete to deliver a call and depending on their relative charges, the LCR Switch (which contains a database of our carriers, destinations and charges) will connect the call via the cheapest carrier. This process means searching for the optimum traffic routes via one or several traffic routings enabling a cost reduction. MobiLinkIP implements LCR functions, since it analyze incoming calls and sends them to the established route or towards the GSM module with SIM card which assures the minimum costs.
MAC Address (Media Access Control) - A MAC address is the hardware (physical) address of a device connected to a network.
All network interface controllers must have a hard-coded and unique MAC address. The MAC address is applied at the factory and uniquely identifies network hardware, such as an Ethernet cards, modems or wireless adaptors on a LAN or WAN. The first part of the address is unique to the company that produced the device, and beyond that it is a sequence of digits unique to a single device manufactured by a company. MobiLink IP features a single Ethernet port, so it will have one MAC.
SNTP - Acronym for **S**imple **N**etwork **T**ime **P**rotocol. Simplified version of NTP, Internet standard protocol used to update the real-time clock in a computer. It assures accurate synchronization to the millisecond of computer clock times in a network of computers. NTP is very useful in packet-switched, variable-latency data networks. In case of MobiLinkIP, if you want to measure the performances of the network, you need accurate, universal time-stamps for the data packets.
NTP runs as a continuous background client program on a computer and it sends periodic time requests to servers, obtaining server time stamps and using them to adjust the client's clock. NTP uses UDP port 123 as its transport layer. It is designed particularly to resist the effects of variable latency. There are numerous primary and secondary servers in the Internet that are synchronized to the Coordinated Universal Time (UTC) via radio, satellite or modem. For more information, visit www.ntp.org.
Routing -The process of determining and prescribing the path or method to be used for establishing connections and forwarding data packets. In a network, a 'routing switch' is a device that combines the functions of a switch, which forwards data by looking at a physical device address, and a router, which forwards packets by locating a next hop address. Each host with a router in the network uses the routing table information to determine the next host to route a packet to for a specified destination.
S-HTTP - Acronym for SECURE HYPERTEXT TRANSFER PROTOCOL. A secure way of transferring information over the Web, by using an application-level encryption scheme. S-HTTP is an extension of the normal HTTP with security enhancements for WWW-based commerce. Web pages that use S-HTTP have a URL starting with https://. Typically HTTP data is sent over TCP/IP port 80, but HTTPS data is sent over port 443. The standard was developed for secure transactions, and uses 40-bit encryption ("weak" encryption) or 128-bit ("strong" encryption).

SMS - **Acronym** for **Short Message Service**; means the transmission of short text messages to and from cellular phones. The messages must be text only (no images or graphics) and not longer than 160 alpha-numeric characters. Operators of Mobile Phone Networks use a spare data channel to send SMS messages. You may send SMS messages to another mobile subscriber, the mobile operator can send you phone settings over-the-air or commercial companies may send dedicated content to your mobile terminal. The embedded firmware allows MobiLinkIP to send and receive SMS (via mobile network) from the computer connected to it.

SIP – Acronym for **Session Initiation Protocol** - a protocol proposed standard for initiating, modifying, and terminating an interactive user session that involves multimedia elements such as video, voice, instant messaging, online games, and virtual reality. It is one of the leading signaling protocols for Voice over IP, along with H.323. MobiLinkIP is used for VoIP calls that use the SIP protocol.

SIP clients traditionally use TCP and UDP port 5060 to connect to SIP servers and other SIP endpoints. SIP is primarily used in setting up and tearing down voice or video calls. However, it can be used in any application where session initiation is a requirement. These include Event Subscription and Notification, Terminal mobility and so on. There are a large number of SIP-related RFCs that define behavior for such applications. All voice/video communications are done over separate transport protocols, typically RTP.

TCP/IP – Acronym for Transmission Control Protocol / Internet Protocol. It was established by the Defense Department of the USA for communications between computers. It has been at first incorporated in UNIX operating system but has become the de facto standard for data transmission via networks, including for Internet.

Currently TCP/IP is the basic communication language or protocol of the Internet, but it can also be used as a communications protocol in private network. TCP/IP uses the client/server model of communication in which a computer user (a client) requests and is provided a service (such as sending a Web page) by another computer (a server) in the network. TCP/IP is a two-layer program. The higher layer, Transmission Control Protocol, manages the assembling of a message or file into smaller packets that are transmitted over the Internet and received by a TCP layer that reassembles the packets into the original message. The lower layer, Internet Protocol, handles the address part of each packet so that it gets to the right destination. For details see the definitions of those protocols that Access - LAN supports.

TCP – Acronym for Transmission Control Protocol. In TCP/IP, the TCP part is the one that takes care of keeping track of the individual units of data (packets) that a message was divided into for efficient routing through the Internet. TCP is known as a connection-oriented protocol, which means that a connection is established and maintained until the message or messages to be exchanged by the application programs at each end have been exchanged. TCP is responsible for ensuring that a message is divided into the packets that IP manages and for reassembling the packets back into the complete message at the other end.

At the destination, TCP reassembles the individual packets and waits until they have all arrived to forward them to you as a single file. It also checks the received packets. TCP acts at the transport level (level 4) of the ISO/OSI model. See also ISO/OSI model, packet, TCP/IP.

TDM – Acronym for **Time Division Multiplexing** - is a type of digital multiplexing in which two or more apparently simultaneous channels are derived from a given frequency spectrum by interleaving pulses representing bits from different channels. In some TDM systems, successive pulses represent bits from successive channels. In other systems different channels take turns using the channels for a group of successive pulse-times (a so-called "time slot"), such as voice channels in E1/T1 landline systems or wireless GSM systems. What distinguishes coarse time-division multiplexing from packet switching is that the time-slots are pre-allocated to the channels, rather than arbitrated on a per-time slot basis. Since it interfaces between VoIP and GSM networks, MobiLinkIP also performs conversion between TDM and packet-switching!

UDP – Acronym for User Datagram Protocol. It is a simpler protocol than TCP/IP that corresponds to the transport layer of the ISO/OSI model. UDP converts the messages generated by the application into data packets to be sent through IP, but does not check if the messages have been transmitted correctly or not.
UDP allows individual packets to be dropped (with no retries) and UDP packets to be received in a different order than they were sent. Consequently UDP is more efficient but less reliable than TCP and is used to different purposes - primarily for broadcasting messages over a network. With UDP, reliability is wholly in charge of the application that generates the message.
UDP is used often in applications such as videoconferencing or games where optimal performance is preferred over guaranteed message delivery.

VoIP - Acronym for **Voice over IP**. It describes the hardware or software category which allows humans to make phone calls over the Internet. The voice signals are converted in data packets and these are sent on the public telephonic lines, avoiding the costs of the PSTN network. The VoIP applications can be used with a regular microphone and computer speakers, but also can be used IP phones or VoIP speakers, providing an identical experience like the regular telephony. In the last time, the quality and the reliability of the VoIP technology improved so much that many users renounced completely at the standard telephony contracts for VoIP technology. MobiLink IP acts as a compact, low-cost a gateway between VoIP calls using SIP or H323 protocols and different mobile telephony networks.

Disclaimer!

The manufacturer reserves the right to modify the product and manual for the purpose of technical improvement without prior notice.

The manufacturer guarantees the good functioning of the product provided that it has been correctly installed and the directives for storage and usage have been respected.

The warranty implies exclusively repairing or replacing the defective unit. The warranty does not include any indirect losses or loss of profit.
The manufacturer is not liable for any damage, whether direct, indirect, special, incidental, or consequential, as a result of using Rohde & Schwarz Topex S.A. MobiLinkIP.

No part of this manual may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, recording, or otherwise, without the prior written permission of the company ROHDE & SCHWARZ TOPEX S.A. S.A.

It is certified hereby that the MobiLink-IP unit from Rohde & Schwarz Topex S.A. is manufactured in concordance with the legal provisions concerning responsibility towards the quality of delivered products, fulfils the quality parameters specified in its “User’s manual” and is fit for the purpose for which it has been designed.
It also warrants that the equipment will perform substantially in accordance with the accompanying documentation.

Any comments, suggestions and proposals of yours concerning our products are welcome and we are gladly waiting for your feedback:

ROHDE & SCHWARZ TOPEX S.A.
Feleacu street, no. 10, sector 1
Bucharest 014186 ROMANIA
Tel: +4021 408.39.00
Fax: +4021 408.39.09
E-mail: topex @topex S.A. .ro
Web: http://www.topex.ro